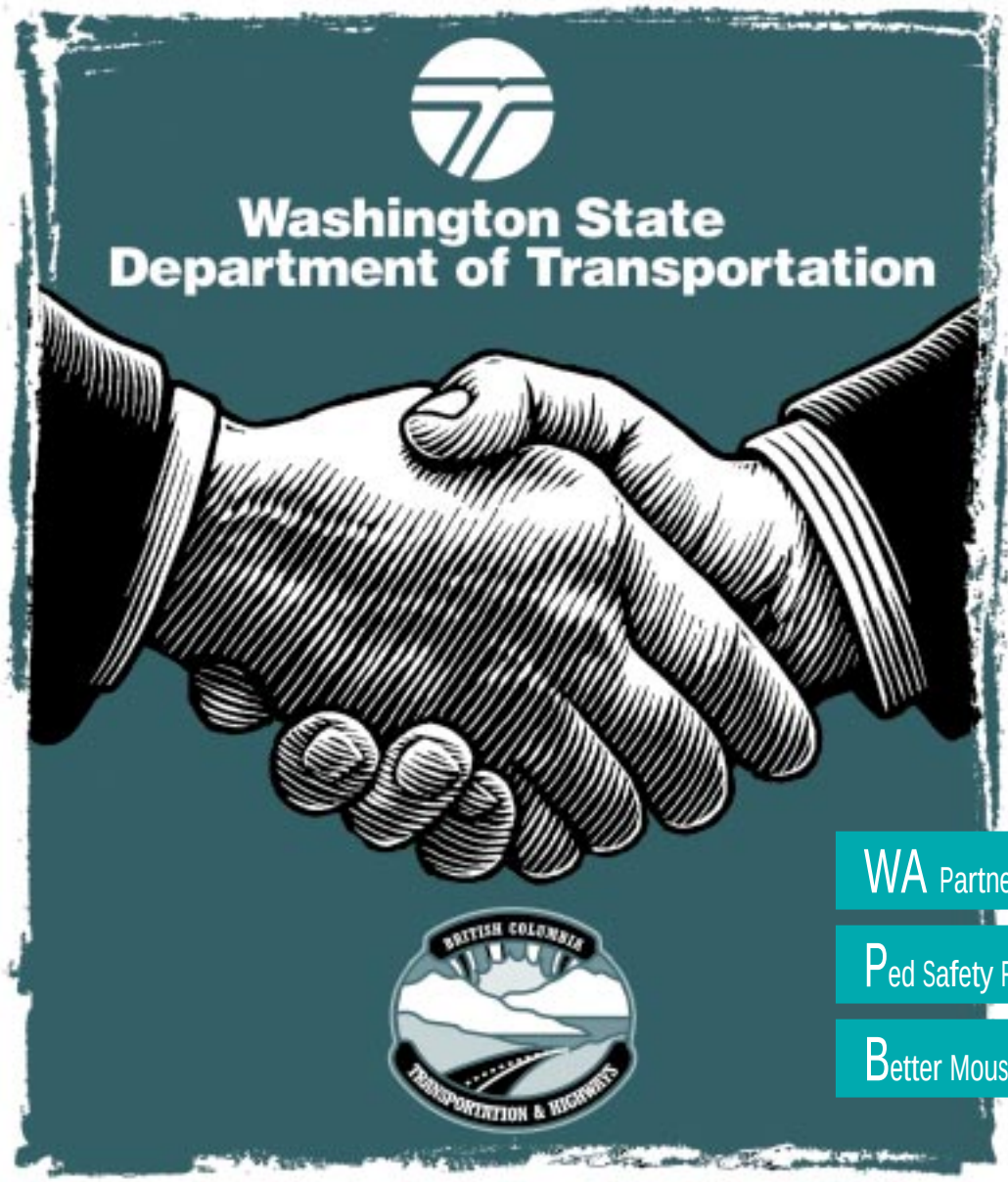
WST2

Washington State Technology Transfer

Formerly the T2 Bulletin



A Technical Newsletter of
the Highways & Local Programs Service Center — WSDOT and the Local Technical Assistance Program
Issue 69, Winter 2001

Washington State Technology Transfer

WST2 Washington State Technology Transfer
is published four times a year:
February / May / August / November

by WSDOT Highways & Local Programs Service Center
Washington State Technology Transfer Center
310 Maple Park Ave. SE
PO Box 47390
Olympia, WA 98504-7390

e-mail: wst2center@wsdot.wa.gov
Home Page: www.wsdot.wa.gov/TA/T2Center/T2hp.htm

Issue 69, Spring 2001

POSTMASTER:
Send address changes to
P.O. Box 47390, Olympia WA 98504-7390

Include both old label and new address, please.

Contents

Technology News

Articles

Departments

From the Editor's Desk

Dan Sunde
Director of Technology Transfer
WST2 Center

A Hearty Welcome to Our British Columbia Neighbors!

The WST2 Center would like to welcome our neighbors to the north! This is the first issue of our newsletter to be shipped to you through the Border Technology Exchange Program (BTEP). The BTEP is a program funded by the US Department of Transportation to promote the exchange of transportation technical information and experiences across our border.

The Washington State Technology Transfer Center is one of 57 centers across the United States with the mission of providing US cities, counties, ports, transit authorities and tribal governments the latest in transportation technology. We do so by providing training classes, technical briefs, field assistance, networking opportunities and a quarterly newsletter, the WST2.

The WST2 Center is working with the British Columbia Ministry of Transportation and Highways (BCMoTH) to develop methods of sharing information between the state and province, one of which is the WST2 newsletter. Through the newsletter we hope to share with you what's new in Washington State and other parts of the US and, in return, provide you an opportunity to publish what's new in Canada. We see this as a valuable opportunity to enhance transportation technology on both sides of the border.

Please consider this your personal invitation to provide us with your own articles on Canadian technology and experience, as well as your response to what you read from our side. We in Washington look forward to sharing information and ideas with you.

Once again, welcome! We hope you enjoy the WST2.

Dan Sunde
Director of Technology Transfer WST2 Center

Secretary of Transportation
Sid Morrison

Assistant Secretary, H&LP
Paula Hammond, P.E.

Director of Technology Transfer
Dan Sunde, P.E.

Publication Editor
Dan Sunde, P.E.

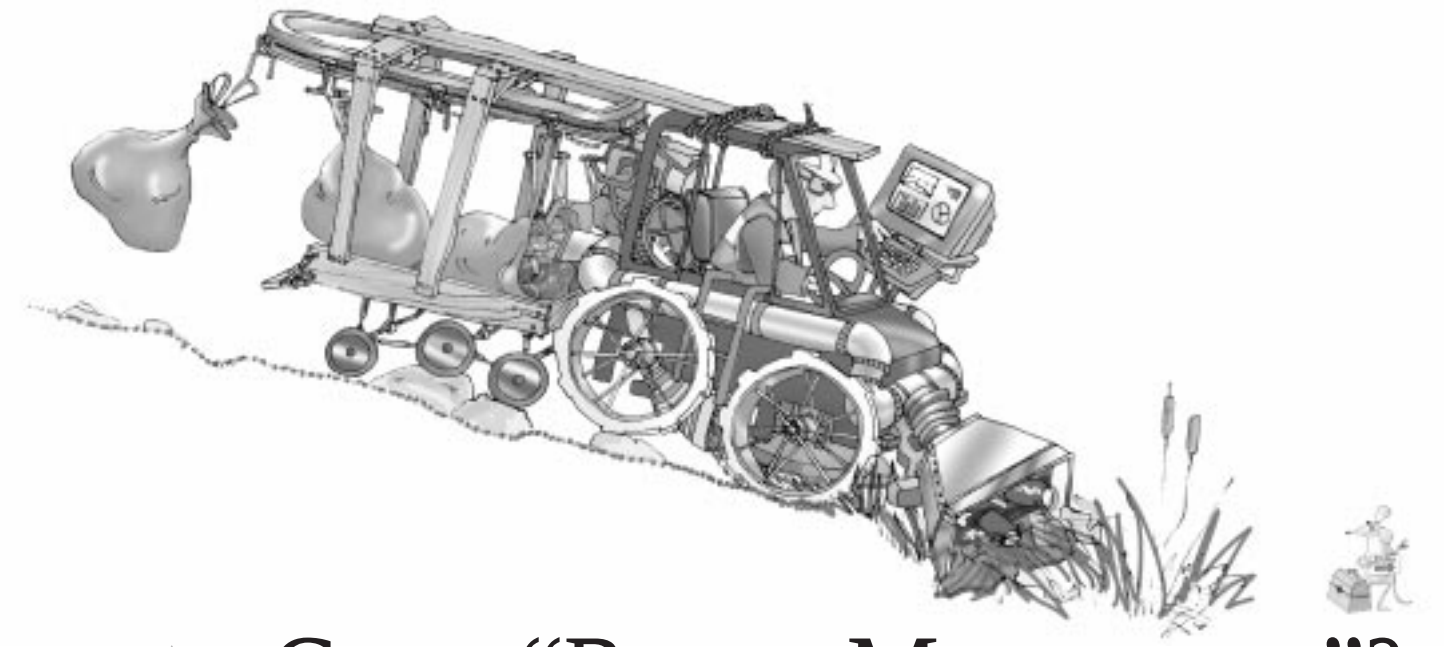
Assistant Editor
Wendy Schmidt

Graphic Design
Jennie Throckmorton

Staff Writers
Bob Brooks
Roger Chappell
Laurel Gray
Dave Sorensen

WST2
Washington State Technology Transfer

2nd *Pacific Northwest Transportation Technology Expo*



BUILD A BETTER MOUSETRAP WST2

Got a "Better Mousetrap"? Bring it to the Expo!

September 12 & 13, 2001

The WSDOT Maintenance Office, WST2 Center and FHWA are cosponsoring the second Pacific Northwest Transportation Technology Expo at the Grant County Fairgrounds in Moses Lake, Washington, on September 12 & 13, 2001. The purpose of the Expo is to demonstrate the leading edge technologies currently available on the market, as well as innovative "home grown" ideas for roadway operations developed by Pacific Northwest state and local agency transportation operations staff members.

A major part of the Expo will be set up for demonstrations and displays of practical tools, equipment modifications and new techniques developed and used in the field by public agencies. No idea is too small. If it works and saves you time and money, we invite you to share it with the rest of the agencies in the Pacific Northwest. This will be one big two-day "show-and-tell" to share your ideas and see what others like you have done to be more efficient and effective.

Attendance, registration and display space are free to public agencies. We have plenty of space. Just let us know what your innovation is and how much space you need. We'll make the arrangements to get you a site. If possible, we encourage the actual inventor be at the display to field questions and demonstrate the functionality.

Please submit your ideas to either:

Dan Sunde, WST2 Center
WSDOT-H&LP
PO Box 47390
Olympia, WA 98504-7390
(360) 705-7390
sunded@wsdot.wa.gov

or

Clay Wilcox, Asst. Maintenance Superintendent
WSDOT-Area 2 Maintenance Shop
8293 SE Spring Creek Rd.
Port Orchard, WA 98367-8192
(360) 874-3050
wilcoxc@wsdot.wa.gov

British Columbia and Washington Partner to Share Technologies! BTEP!

The WST2 Center was recently given the opportunity to expand their involvement in technology transfer. The Center was approached by the USDOT Federal Highway Administration (FHWA) with a request to implement the Border Technology Exchange Program (BTEP). The BTEP is a federally funded program to promote the exchange of technical information between the Canadian Territories and Provinces and their bordering states in the US.

As a result, the WST2 Center has begun to work with the British Columbia Ministry of Transportation and Highways (BCMoTH), the FHWA Olympia Office and the WSDOT to develop an on-going process to exchange technology between the Canadian province and the states in the Pacific Northwest.

The Northwest BTEP is a federally developed program administered through the FHWA Olympia Office and managed through the WST2 Center. The primary goal of the BTEP is to foster communication, coordination and understanding between British Columbia and the states in the Pacific Northwest. The program will do this in all aspects of roadway and transportation engineering, planning, construction and maintenance through on-going exchange of

in the WST2 Center see this as a perfect fit with the role of the Center.

The BTEP allows for a broad number of activities that can be implemented through the program. To kick things off, the WST2 to provide a means for an on-going two-way exchange of information. It is anticipated that not only will the British Columbia Ministry of Transportation and Highways learn more about what the states of Washington, Oregon and Idaho

are doing but BCMoTH will also use the newsletter to share what is being learned in their agencies. The newsletter will provide a platform to distribute information on innovative projects, applied research, new concepts, evaluations of new products and other current and emergent information.

NHI Training classes are currently being scheduled along the Washington-British Columbia border to allow attendance by students in both countries. A peer exchange was conducted in February to allow engineers in various technical fields to share their processes, projects and problems one-on-one with their counterparts.

Other eligible activities available through the program include:

- Seminars, workshops and conferences
- Personnel exchanges
- Demonstration projects in border regions
- Value engineering studies on border related problems
- Communication links with private and public organizations
- Cooperative research activities
- Distribution of technical articles and publications
- Development of a joint technical video library

As the Border Technology Exchange Program continues to develop and mature, the continuous exchange of new and different ideas will benefit the transportation systems of both countries. ▲

(Photo)The Washington State Technology Transfer Center's (WST2) initial meeting with the British Columbia Ministry of Transportation and Highways (BCMoTH) and Federal Highway Administration (FHWA) in September 2000 to discuss the Border Technology Transfer Program.

From Left to Right:
Mike Oliver, BCMoTH, Chief Geotechnical, Materials and Pavement Engineer
Cathy Nicholas (Front), FHWA, Pavement Engineer
Peter Brett (Back), BCMoTH, Chief Bridge Engineer
Al Brown, BCMoTH, Manager Geotechnical and Materials
Laurel Gray (Front) WST2-WSDOT, Training Coordinator
Dan Sunde (Back) WST2-WSDOT, Director of Technology Transfer
Turgot Ersoy, BCMoTH, Manager Geotechnical Engineering
Merv Clark, BCMoTH, Chief Engineer

Back by Popular Demand – The Pacific Northwest Transportation Technology Expo!

The second PNW Transportation Technology Expo is on the drawing boards. Make your plans now to attend the second technology exposition — the only exposition focused solely on presenting the latest technology in transportation maintenance and operations to the public agencies in the Pacific Northwest. The WSDOT Field Operations Support Service Center (FOSSC), Washington State Technology Transfer (WST2) Center and Federal Highway Administration (FHWA) are sponsoring the event to bring you the most current technology in the transportation field.

Come and see two full days of demonstrations showing the latest technologies that can make your work easier, more effective, and efficient. Judge for yourself their usefulness and effectiveness.

One of the most popular parts of last year's Expo was the "Build a Better Mousetrap" demonstration event. We're doing it again! See first hand the innovative ideas your peers have developed to save money, improve performance, and reduce labor. Check out their inventions, see how they work, and get ideas on how you could use them — or improve on them! At the Expo, you can talk with the inventors and learn how and why they made an idea into a usable solution — so you can do it yourself!

Got one of your own? Bring your cost or labor saving tool or invention to Moses Lake and share it with your counterparts from other local agencies. The more the merrier! Who knows? You could be the winner of this year's Crystal Mouse Award! It is given to the team who brings the most innovative idea to the Expo — as voted by those in attendance!

See how current research projects can help you do your work better with practical information you can apply today.

See dozens of displays of the latest tools, materials and services to make your design, construction, and maintenance and operations dollars go farther.

What: Pacific Northwest Technology Transfer Expo

When: September 12&13, 2001

Where: Grant County Fairgrounds, Moses Lake, Washington

How Much: FREE!!!!

Who should attend: All Engineers, Superintendents, Supervisors and Technicians involved with transportation construction, maintenance and operations.

First Ever "Crystal Mouse Award"

Congratulations to the WSDOT Southwest Maintenance Team!

On behalf of the Washington Partnership for Quality Transportation (PQT) and the Washington State Technology Transfer Center (WST2), Paula Hammond, Assistant Secretary Highways & Local Programs, and Dan Sunde, Director of the WST2 Center, awarded the Crystal Mouse Award to the WSDOT South Central Maintenance Team for their Delineator Post Punch.

The team received a crystal award and each team member received a certificate and custom baseball hat. In attendance at the December 12 Yakima event were Jimmey Crawford and Errol Rhodes, inventors and fabricators of the sophisticated mounting system, Tom Root originator of the first punch, Joel Havelina, Jim Crownover, and Roy Gilliam, presenters of the punch at the Pacific Northwest Technology Expo, Mike Kukas and Leonard Pittman, Southwest Region Administrator.

Photo: (left to right) Mike Kukas, Joel Havelina, Jim Crownover, Tom Root, Roy Gilliam, Leonard Pittman, Errol Rhodes, Paula Hammond, Jimmey Crawford

WST2 Center Hosts Technology Exchange

By Roger Chappell, WST2 and Kimberly Colburn, H&LP

When Alaska DOT representatives were looking for business models that applied the latest Geographic Information Systems (GIS) and Global Positioning Systems (GPS) technologies, one of the three state departments of transportation they choose to visit was Washington State Department of Transportation (WSDOT).

Alaska DOT representatives contacted Roger Chappell in the Washington State Technology Transfer (WST2) Center to host a technology exchange. The day was packed with back-to-back meetings and hands-on displays of some of WSDOT's most exciting GIS and GPS related applications.

The technology peer exchange included a demonstration of the GPS/LRS Data Collection Van by Mark Finch, Brian Limotti, and Max Schade of the Roadway Data Section of the DOT's Transportation Data Office in Olympia, Washington. Their van contains equipment that collects raw GPS data points that are used to generate very accurate GIS base maps. Glenn Davis and Martha Marrah explained how the GPS data is reviewed and processed before going to the Cartography/GIS section to be made into maps. Tom Smith led a discussion of mapping grade GPS data collection.

Lee Arnold showed the Alaska group WSDOT'S SR View van and the equipment it houses. Its function is to gather digital images of roadways on the state system. Cindy Gonia showed the group the processing and reproduction center, where images are made available on WSDOT'S website and within the Department's computer network.

From there the group went to the MIS Data Management Services Center, where Chris Kemp and Michelle Blake told the group about data warehousing, data marts, and the WSDOT GIS data catalog. The geospacial data catalog is a web-based catalog of geospacial data to be used in GIS that is available to WSDOT's internal and external customers.

Next on the tour was the Cartography/GIS Section, where Ron Cihon showed how to derive map accuracies and introduced Allen Blake, the cartographer who makes the routes from the GPS/LRS data. Marci Carte demonstrated WSDOT's GIS Madog products, and Carol Kenstowicz demonstrated several of WSDOT's Internet Map Serving projects.

In the debriefing time after the technology exchange, Alaska DOT representatives stated they were very impressed with how WSDOT has applied these various technologies. In several areas Alaska DOT will be using WSDOT as a model for their own technological development. The Alaska DOT representatives expressed their appreciation to all those who took the time to share during the exchange. They rated this technology exchange highly beneficial and reported it greatly exceeding their expectations. David Oliver, of Alaska DOT, sent Roger Chappell a note personally thanking him for organizing the technology exchange. ▲

If your agency is interested in information on any of these technologies or processes please contact Roger Chappell at (360) 705-7539 or e-mail ChappeR@wsdot.wa.gov.

Bridge Design Manual Online!

By Matt Love, WSDOT Engineering Publications

For the first time, the Washington State Department of Transportation (WSDOT) Bridge Design Manual is available on the WSDOT Website in electronic form. The file is exceptionally large, (30,359 kb) so it is also available from the same location as individual chapters. You can find the Bridge Design Manual at:

http://www.wsdot.wa.gov/FASC/EngineeringPublications/library.htm

- Other new publications on the WSDOT Web site are:
- A Guide for Local Agency Pavement Managers
- Annual Traffic Report – 1999
- Appraisal Guide
- Motorists Information Signs
- Scenic Vistas Act
- Sidewalk Details – A Guide for Washington Local Agencies, Tribes and Nations
- Standard Survey Codes
- Transportation Planning for Small and Medium Sized Communities

If you do not have Internet access or you have difficulty accessing these publications, they will be available on WSDOT's January 2001 Engineering Publications CD-ROM. If you are uncertain whether you have an active subscription to the CD, please contact Matt Love, WSDOT Engineering Publications Distribution Supervisor, at (360) 705-7430 or LoveM@wsdot.wa.gov

Clean Air Requirements

FHWA Releases Revised Guide

Reprinted from "Research & Technology TRANSPORTER," USDOT-FHWA, December, 2000

In early October, FHWA released the revised *Transportation Conformity: A Basic Guide for State & Local Officials*. The new version of this report is intended to facilitate compliance by State and local agencies with the transportation conformity requirements in the Clean Air Act Amendments of 1990.

The updated guide, designed for state and local transportation officials, explains the basics of the transportation conformity process. It covers the definition and what actions are subject to transportation conformity, who makes conformity determinations and how often they are made, the key components of conformity determinations, and the consequences of failing to make a conformity determination. The guide also discusses the roles and responsibilities in the conformity process.

The guide was prepared by FHWA and the Federal Transit Administration (FTA), in cooperation with the Environmental Protection Agency (EPA). It reflects the implementation of the Transportation Equity Act of the 21st Century, and the March 2, 1999 decision by the U.S. Court of Appeals for the District of Columbia, which affected certain conformity provisions.

The guide was originally published in 1997, but this revised version reflects changes in the transportation conformity provisions. The guide can be viewed on the Internet at:

www.fhwa.dot.gov/environment/conformity/basic_gd.htm

▲

Cecilia Ho
(202) 366-9862
cecilia.ho@fhwa.dot.gov

Design Review

By Al King, Highways & Local Programs Operations Engineer, WSDOT-H&LP

Cities and counties are recognized as an inherent part of the Washington State Transportation Team. Because Washington State Department of Transportation (WSDOT) design manuals affect local agency projects, the WSDOT design manual review process is open to cities and counties. Those volunteers who serve on the City/County Design Standards Committee, constituted under State Law, automatically have the opportunity to comment on changes proposed for these manuals. If you would like to have the opportunity to review changes that may affect your operations, you are invited to contact Al King, Highways & Local Programs Operations Engineer, at KingA@wsdot.wa.gov or at (360) 705-7375. Al will see that your name is placed on the e-mail notification list so you will be advised of proposed changes. ▲

Manual on Uniform Traffic Control Devices - Millennium Edition

By Edwin Lagergren, P.E., Traffic Operations Office, WSDOT

It is here!! The Final Rule of the Manual on Uniform Traffic Control Devices - Millennium Edition (MUTCD-ME) was published in the December 18, 2000 edition of the Federal Register.

The Manual on Uniform Traffic Control Devices - Millennium Edition will require a formal adoption by WSDOT in the Washington Administrative Code (WAC). Local Agencies and WSDOT Regions and Service Centers will soon be solicited to participate in a formal review and comment process prior to adoption of the MUTCD - ME. The MUTCD - ME will not go into effect in Washington State until the adoption process is completed. ▲

Local Agency Guidelines Group (LAGG) Off to a Great Start!

By Darlene Sharar, Standards and Procedures Engineer, WSDOT-H&LP

On August 31, 2000, the Local Agency Guidelines Group List-Serve, hosted by Washington State Department of Transportation's (WSDOT) Highways & Local Programs Service Center (H&LP), went into service. On that first day, we registered 35 individuals who had expressed a prior interest in the concept.

The LAGG's purpose is to notify our customers of interim updates to the Local Agency Guidelines Manual (LAG). These updates contain some requirements and information that simply can't wait for the twice-yearly update and distribution of the WSDOT Engineering Publications CD. The LAGG is one of the methods used by H&LP to provide the interim information immediately. We are also using the LAGG to send out updates of the General Special Provisions and Amendments.

In just over three months, an additional 81 individuals have signed up for the LAGG list-serve, and as of December 7, 2000, the LAGG had a total of 126 subscribers! If you have questions or comments regarding the LAGG List-Serve, please contact Darlene Sharar, H&LP Operations Analyst. ▲

(360) 705-7383
ShararD@wsdot.wa.gov

How can we serve you better?

WSDOT's GeoData Distribution Website:

By Michelle Blake, WSDOT GIS Data Administrator

At the Washington State Department of Transportation we are working to provide local government groups easier access to transportation-related GIS data. WSDOT hosts an online geo-data distribution site from which GIS data and metadata (descriptive reports about the data) can be browsed and downloaded. It is: http://www.wsdot.wa.gov/gis/geodatacatalog/default.htm

How can I use this resource?

On this site, GIS data sets are listed by name and grouped into general subject areas like transportation, environmental, and so forth. Clicking a data set's name opens a descriptive report, which, among other things, tells customers:

- Who created the data and how
- What the data's accuracy is
- What the attributes mean and who defined them
- What time period the data reflects
- How often the data is revised.

A sample map display of the data set shown relative to the county boundaries in Washington State can be opened via the "view" link. Clicking a "download" link on the web site initiates an FTP transfer of a self-extracting zip file of the data set. Each of these ".exe" download files includes a metadata report along with the ESRI formatted GIS data. The website also provides WSDOT data steward contact information, geography related news items, and a growing list of links to other state agency GIS web sites.

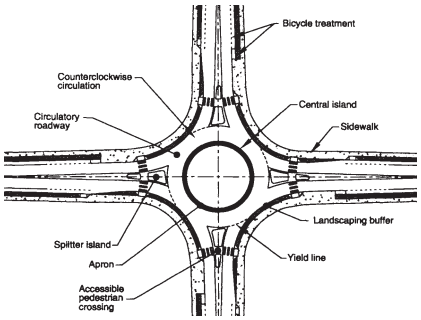
What about the types of data I need?

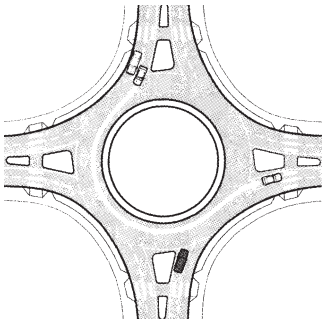
Our site is a work in progress. Ultimately, we would like to provide the kinds of data and information that can streamline your work as our transportation partner. We would appreciate your comments, guidance and suggestions. Please contact WSDOT's GIS Data Administrator, Michelle Blake, by phone at (360)-705-7797 or e-mail BlakeM@wsdot.wa.gov to discuss your transportation-related GIS data needs. ▲

FHWA's "Roundabouts: An Informational Guide"…

By Darlene Sharar, Standards and Procedures Engineer, WSDOT-H&LP

"Roundabouts: An Informational Guide," published by FHWA, is now available to Washington State local agencies! Highways & Local Programs was given a limited number of the roundabout guides for distribution. You may request one of these guides for your agency by contacting Darlene Sharar, Standards and Procedures Engineer, at (360) 705-7383 or ShararD@wsdot.wa.gov. Only one Guide per agency, please. ▲





Chapter 1
Introduction

1.1 Scope of Guide

1.2 Organization of Guide

1.3 Defining Physical Features

1.4 Key Dimensions

1.5 Distinguishing Roundabouts From Other Circular Intersections

1.6 Roundabout Categories

Defines the key features and dimensions of a roundabout and describes the various types of roundabouts. It clearly highlights the differences between roundabouts and other forms of traffic circles with the generous use of photographs to depict a variety of situations.

Chapter 2
Policy Considerations

2.1 Characteristics

2.2 Multimodal Considerations

2.3 Costs Associated With Roundabouts

2.4 Legal Considerations

2.5 Public Involvement

2.6 Education

Provides a broad overview of roundabout performance characteristics, including safety, delay, environmental factors, traffic calming, aesthetics, and multimodal considerations, as well as the policy considerations that pertain to their use. Costs associated with roundabouts relative to other intersection forms, legal issues, and education and public involvement techniques are also discussed.

Chapter 3
Planning

3.1 Planning Steps

3.2 Considerations of Context

3.3 Number of Entry Lanes

3.4 Selection Categories

3.5 Comparing Operational Performance of Alternative Intersection Types

3.6 Space Requirements

3.7 Economic Evaluation

Presents planning-level guidelines for identifying appropriate intersection control options. This chapter presents daily traffic volume-based procedures for evaluating roundabout feasibility at a given location.

Chapter 4
Operation

4.1 Traffic Operation at Roundabouts

4.2 Data Requirements

4.3 Capacity

4.4 Performance Analysis

4.5 Computer Software for Roundabouts

Details methods for analyzing the operational performance (capacity, delay, and queuing) of each type of roundabout. This chapter describes traffic operations at roundabouts, lists the data required for evaluating roundabouts, shows how to estimate capacity, describes measures of effectiveness, and provides a brief overview of available software tools.

Chapter 5
Safety

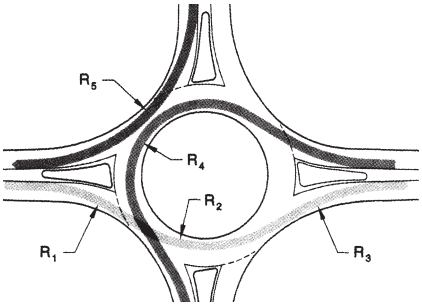
5.1 Introduction

5.2 Conflicts

5.3 Crash Statistics

5.4 Crash Prediction Models

Discusses the improvements in safety performance that roundabouts typically provide at intersections. Roundabout safety related to vehicles, bicycles, and pedestrians is discussed, and international roundabout safety experience is presented for comparison. In addition, crash prediction models are given for evaluating crashes at roundabouts.



Chapter 6
Geometric Design

6.1 Introduction

6.2 General Design Principles

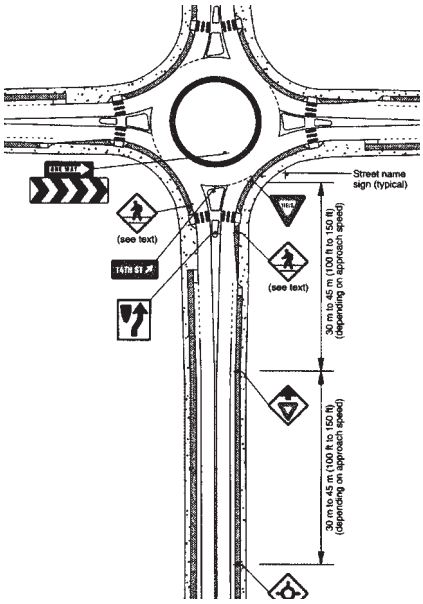
6.3 Geometric Elements

6.4 Double-Lane Roundabouts

6.5 Rural Roundabouts

6.6 Mini-Roundabouts

The chapter presents the basic design philosophy of speed reduction and speed consistency to maximize the safety of a roundabout. This chapter presents specific roundabout geometric design principles, and then discusses each design element in detail, along with appropriate parameters to use for each type of roundabout.



Chapter 7
Traffic Design and Landscaping

7.1 Signing

7.2 Pavement Markings

7.3 Illumination

7.4 Work-Zone Traffic Control

7.5 Landscaping

Discusses a number of traffic design aspects that should be considered once the basic geometric design has been established. These details include signs, pavement markings, illumination, and landscaping. Chapter 7 also discusses issues regarding work-zone traffic control at roundabouts.

Chapter 8
System Considerations

8.1 Traffic Signals at Roundabouts

8.2 At-Grade Rail Crossings

8.3 Closely Spaced Roundabouts

8.4 Roundabout Interchanges

8.5 Roundabouts in an Arterial Network

8.6 Microscopic Simulation

Identifies specific issues and treatments that may arise within a systems context. The chapter discusses signal control at roundabouts and the issue of rail crossings through or near a roundabout. Roundabouts in series with other roundabouts are also discussed, including those at freeway interchanges and those in signalized arterial networks. Finally, Chapter 8 presents simulation models as supplementary operational tools capable of evaluating roundabout performance within an overall roadway system. ▲

Partial reprint from "Roundabouts: An Informational Guide, USDOT Document FHWA-RD-00-068

New TIB Grant Resource Site

Financial grants are a major source of funding for thousands of organizations and agencies, including local governments. More than 25,000 private and public foundations distribute over $6 billion in grants to American individuals and agencies. Grant writing and grant administration is a multi-million dollar industry as thousands of government and non-profit agencies compete for grant dollars that provide housing, education, health, and safety to citizens who would otherwise go without. Many local governments use grant monies to comply with state and federal government mandates to upgrade and repair their infrastructure, restore their natural resources, educate their citizenry and stimulate their local economies.

The folks at the Transportation Improvement Board (TIB) have posted a new and improved site for searching out grants and technical assistance of all kinds. The primary purpose of the TIB is to administer state funding for local government transportation projects. Projects are funded by utilizing TIB revenue in combination with local matching funds and private sector contributions. ▲

Just go to http://www.tib.wa.gov/grants/ and see what's new!

For Further Information Contact TIB at:
Washington State Transportation Improvement Board (TIB):
PO Box 40901
Olympia, WA 98504-0901

Our apologies to Public Works Magazine

After being so kind to allow us to reprint their article, "Washington DOT Investigates the Soil Bioengineering Alternative," by Lisa Lewis, Shannon Hagen, Mark Maurer and Sandy Salisbury, we didn't give Public Works Magazine credit for their generosity. Through a series of computer crashes and retyping of several articles in that issue of WST2, the original acknowledgment was lost.

This great article was reprinted by permission of Public Works Magazine and originally appeared in the Public Works Magazine, August 2000, copyright 2000, PW Journal Corp., Ridgewood, NJ.

We thank Public Works Magazine for their permission to reprint and we extend our apologies for the oversight.

Dan Sunde, Director

WST2 Center

Throckmorton Hallowell 2001

Clay said "demonstrate ten times tonight" not "detonate ten times to the ninth"!

Call for 2002 National Scenic Byway Grants Coming Soon!

By Judy Lorenzo, Heritage Corridors Manager, WSDOT-H&LP

It is that time of year again when partners on state designated scenic byways collaborate on grant applications. The Federal Highway Administration will be issuing the official call for projects this month. Please contact our office immediately if you would like to receive a copy of our official Application Guidance Package. The package is available by mail or electronically. Please e-mail Bobbie Garver at GarverB@wsdot.wa.gov or call 360-705-7302 to be placed on our mailing list.

All applications are required to go through an eligibility screening process. In addition, applications are required to be submitted both electronically and in hard copy. To get more familiar with the process and what is eligible please visit our web site.

http://www.wsdot.wa.gov/hlrd/HCP/GrantOpp.htm

As soon as the new guidance is released from FHWA we will update our site. Project categories are not expected to change. You are encouraged to explore our site and read some of the documents. It is highly recommended that you attend a workshop to learn how to use the on-line application system. ▲

The following lists of dates are provided to help you plan ahead for a successful application experience.

REQUIRED	April 5, 2001 Draft Application Due to Heritage Corridors Program
REQUIRED	Week of April 16-20 Grant evaluation phone meetings with Applicants and WSDOT Region Offices.
REQUIRED	May 22nd, 2001 Deadline for final applications to be submitted to Heritage Corridors Program
	June 18, 2001 Grant Ranking Team Meeting All applications are ranked and a list is recommended for national competition
DEADLINE	June 29, 2001 WSDOT Deadline for Submittal to FHWA

It's That Time of Year! PQT Achievement Award

By Kimberly Colburn, Public Information Officer, WSDOT-H&LP

Background Information

The Washington Partnership for Quality Transportation (PQT) includes partners from both public and private transportation organizations whose focus is to continually improve Washington State's highway system.

The PQT Steering Committee demonstrates and publicizes its commitment to the principles of quality transportation improvements by sponsoring a formal awards program. The PQT Achievement Award is given during the odd numbered years to recognize exceptional accomplishments in highway construction and design.

Project Eligibility

To be eligible for this award, a project must be a highway project and must be the result of a single construction contract. Contract joint ventures are also eligible. The project must have been completed and open to unrestricted traffic between November 1, 1998 and December 31, 2000.

Evaluation Panel

The PQT Award Panel will evaluate all nominations. The panel will include individuals who have knowledge of the transportation industry and of the principles of quality and partnerships that PQT advocates. Points will be awarded according to the scoring guidelines and criteria outlined in this announcement.

Nomination Process

The PQT Award Panel will select an exemplary project that exhibits high standards of quality in the following areas:

- Ride (where applicable)
- Appearance
- Material Uniformity
- Demonstration of Performance

Evaluation Criteria

The PQT Award Panel will use the following five criteria and associated points (totaling 1,000 points) to evaluate the nominations. Nominations submitted must include a clear narrative explanation of how the project achieved each of these criteria.

Quality Process and Results (300 points)

The specific measurement, process management, and quality assurance methods used to guarantee the delivery of a quality project.

Customer Focus (200 points)

The extent to which customers/users benefited from the project and the project team's involvement and interaction with the neighboring community.

Teamwork (200 points)

The effective partnership and support among all those involved in the development, design, and completion of the project.

Innovation and Value (150 points)

The use of new approaches to design and construction such as materials, technology, management and human resources, and how these approaches added value to the project.

Long-term Improvement (150 points)

How the methods, techniques, and innovations used on this project are integrated into the way future projects will be designed and constructed.

Nomination Package

The nomination form can be found on the PQT Web site at: www.wsdot.wa.gov/wqi/

Each nomination package must include the following:

- The completed nomination form.
- A narrative presentation, limited to 10 pages maximum, that includes:
  - An overview of the project,
  - An explanation of how the project team achieved each of the five criteria,
  - An executive summary, and
  - A one-page press release.
- Appendices (maximum of 10 pages) presenting any additional relevant information to support the narrative presentation (drawings, photographs, newspaper articles, or test results).
- Three prints each (not photocopies) of at least two photographs that provide a good project overview or a representative scene from the completed project. Some of these prints will be used in publicity for the award.

Note: To facilitate reproduction of the nomination package, please submit the package unbound.

Nomination Submittal

The nomination packages were due March 16, 2001.

PQT Quality Achievement Award

c/o Paula J. Hammond, P.E.
Assistant Secretary, Highways & Local Programs

WSDOT
PO Box 47390
Olympia, WA 98504-7390

Award Presentation

The PQT Steering Committee will contact the winning team and present the Quality Achievement Award during the Washington Chapter, American Public Works Association's Spring Conference April 17-20, 2001 in Everett. ▲

Questions

If you have any questions regarding the award process, contact:

Kimberly Colburn
PQT Coordinator
Highways & Local Programs
WSDOT
(360) 705-7879
ColburK@wsdot.wa.gov

Words from the Chair

A new year has arrived and with it we all begin to finalize our budgets and project lists for the up coming construction season. Hopefully everyone receives the budgets they need. Ha! As a result of the recent elections we all have to tighten our budgets and look at truly cost effective approaches to our pavement needs. The silver lining in all of this is that we, as pavement managers, can play a significant role in the tough decisions that have to be made. True benefit cost analysis of treatments is becoming even more critical.

Now that fewer dollars are available for maintenance and rehabilitation projects, the average pavement condition index goals are becoming a popular topic of discussion for most agencies. We are attempting to maintain an average PCI of 76 in Clark County. I am trying to gather information from as many agencies as possible on their PCI goals and would appreciate your input. Please take a few minutes to email me and tell me:

1. What your agency is targeting as an average for your system;
2. How your agency determined what PCI to target; and
3. How recent initiatives have affected your average.

I would like to hear from as many agencies as possible, so please take the time to respond. I will compile the information and make it available to all that would find it helpful. Contact me via email, please.

McentirB@co.clark.wa.us

The training committee is very close to finalizing the recommendations that have been developed. A letter will be going to the WST2 Center requesting they provide the training identified. Many of the areas that we have identified as a group already have training materials developed so training will begin in those areas almost immediately. Look for training announcements soon.

The visual distress deduct matrix committee has yet to get off of the ground. Most of the interest has come from the private sector. This effort may be put on hold until we have some volunteers to balance the committee. If you have any interest in participating please contact Bob Brooks at the WST2 Center, (360) 705-7352. Bob has graciously accepted the responsibility of compiling a list people willing to serve on that committee.

The NWPMA spring quarterly meeting will be held at the Coeur d'Alene Inn Hotel in Coeur d'Alene, Idaho, April 11 and 12, 2001. April 10 will feature a day of classes sponsored by the WST2 Center. Look for reservation and class/program information elsewhere in this issue of WST2. During the conference there will be an Executive Board meeting and also a Non-destructive Testing Committee meeting. Anyone with interest in either of these meetings is welcome and encouraged to attend. These meetings will probably be held after the regular sessions.

That is all for now. I hope you all had a great holiday season. I look forward to seeing everyone in Coeur D' Alene in April.

Bill McEntire, President

To: All NWPMA Members and Other Interested Individuals

From: Bill Whitcomb, City of Vancouver

Subject: HELP!!! (And a Great Opportunity That Could be Fun!)

Ouch!! Ouch!! Ok, Ok! — I'll do it! (Wow, Bill McEntire is sure strong!)

I have volunteered to put together a program for the last morning of the 2001 spring quarterly meeting. I think it would be fun and a real help to have an open discussion of pavement management experiences. I would like to have a number of individuals willing to give 5-20 minute presentations on something in your pavement management program or a construction project that you would like to share with the group. If you are interested, please e-mail me at

Bill.Whitcomb@ci.vancouver.wa.us

Give me a brief idea of what you would like to share. It doesn't have to be fancy. I am sure that your experiences will be welcomed by the group and will be helpful. Once I receive your responses, I will assemble the program and will act as the MC for the session.

The topics are wide open. Here are some ideas:

- What is one thing you did that you will never do again? Why did it look appealing? What went wrong and why? How did you deal with it and get through it? (Sumo wrestling adventures are a bit on the edge but might add some spice to the session.)
- What is one thing that went better than you ever hoped it would? Why do you think it went so well, what will you do to keep it going well into the future?
- Documenting processes and procedures for implementing and updating pavement management data seems to be something we never get around to. If you have, what have you done, how did you go about doing it, and what do you see for the future?
- Ongoing support of programs is important. What do you do to maintain management support of your pavement management program?
- Have you successfully transitioned pavement management responsibilities from one individual to another? How did you do it?

Anyway, you get the idea. I'm looking forward to hearing from you.

Bill

PS: If I don't hear from anyone, Howard H. has agreed to talk about his sumo wrestling experiences.

Northwest Pavement Management Association

2001 Spring Conference

The Northwest Pavement Management Association (NWPMA) will hold its Spring Conference in Coeur d'Alene, Idaho on April 10 – 12, 2001. A very interesting and informative agenda has been planned by the NWPMA, and it will include the following items:

Two pre-conference workshops will be held on April 10. The first workshop is organized into two sessions. The first four-hour session, "Introduction To Pavement Management For Small Agencies," will provide an overview of pavement management and its benefits to the local agency. The second four-hour session, "Introduction To StreetWise," will cover the paper and pencil pavement management system developed for local agencies. This training will be provided to local agencies at no cost to the agency. The second workshop, "Pavement Rehabilitation Techniques," is designed for those interested in reviewing or learning more about pavement rehabilitation strategies. If you wish to attend one of the workshops, please check the appropriate box on the registration form.

The remaining Conference is comprised of one and a half days of sessions devoted to informing and helping the pavement manager in the daily performance of his or her duties. Sessions scheduled for the Conference include:

- Management perspective on a pavement management system.
- Non-destructive testing and how to integrate the results into pavement analysis.
- Freeze-thaw cycle and its impact on pavement performance.
- Base stabilization techniques and how they perform.
- Nova chip and other innovative pavement technologies.
- Asphalt rejuvenators and dust control products.
- Presentations on pavement management experiences and the lessons learned.

In addition, the usual updates on what's happening in the NWPMA, WST2 Center and CRAB will be presented. The NWPMA will also be holding an executive board meeting and an NDT Committee meeting at the conference. Times and locations will be announced at the conference. ▲

Please fill out the Registration Form included in this issue and fax or mail it to Vicki Griffiths at the fax number or mailing address shown the form.

2001 Northwest Pavement Management Association

Registration Form

Spring Conference

April 10-12, 2001

Name: _____

Title: _____

Organization: _____

Mailing Address: _____

City: _____

State: _____

Zip Code: _____ Phone Number: _____

Fax Number: _____ E-Mail Address: _____

Pre-Conference Workshop Information – (2) Workshops on April 10th

Select 1

❑ I want to attend the "Introduction to Pavement Management-Local Agencies" & "StreetWise."

❑ I want to attend the "Pavement Rehabilitation Techniques."

Conference Information

Please Note:
Meals and Lodging are not included in the registration fee.

Light refreshments will be served.

Registration must be received by:
April 1, 2001

Conference Registration Fee:
$50.00 per person
Make Checks payable to NWPMA

Mail or Fax to:
Vicki Griffiths
Skagit County Public Works
1111 Cleveland Avenue
Mt. Vernon, Washington 98273-4215

FAX: (360) 336-9369
Phone: (360) 336-9333 ext. 1-3139
vickig@co.skagit.wa.us

Hotel Information:

Coeur d'Alene Inn & Conference Center
West 414 Apple Way
Coeur d'Alene, ID 83814 - 9355

Hotel Reservations: 1-800-251-7829
Government Rate: $56.00 + tax per night

Make room reservations with the hotel by MARCH 23, 2001, to receive Government Rates. BE SURE TO ASK FOR THE GOVERNMENT RATE.

Shuttle Service:
Coeur d'Alene Inn provides a round-trip shuttle from the Spokane International Airport to the hotel for $40 plus gratuity.

"The sum of the whole is this: walk and be happy; walk and be healthy."

Pedestrian Safety Roadshow

SHARE THE VISION ▪ SAFE PEDESTRIANS AND A WALKABLE AMERICA

"The best way to lengthen out our days is to walk steadily and with a purpose."

Charles Dickens

Charles Dickens had it right: walking benefits the body and soul. In fact, walking is the preferred method of transportation for many Americans, especially those who cannot or choose not to operate a motorized vehicle. However, the one concern shared by the majority of pedestrians is safety.

The statistics are frightening. Nationally, approximately 5,300 pedestrians are killed annually, and automobiles injure an additional 80,000. Since 1998, in Washington State, over 180 pedestrians have died.

In an effort to address pedestrian safety at the community level, the U.S. Department of Transportation developed the Pedestrian Safety Road Show (PSRS). This four-hour workshop provides city leaders, citizens and transportation professionals a unique opportunity to work together to improve safety on the streets for those who travel by foot.

Tailored to meet the individual needs of a community, the PSRS is facilitated by a trained individual with a transportation safety background. The facilitator helps a community identify and solve potential and existing problems that affect pedestrian safety and walkability.

What happens during a Road Show? There is an opportunity for participants to share pedestrian safety concerns. A multi-media presentation addressing non-motorized transportation safety issues specific to the host community is shown. There is also a session on planning, design and engineering principles.

After the presentations, there are breakout sessions, providing participants an opportunity to identify issues and concerns related to walkability in the community. Local policies are discussed, and solutions to transform the community's transportation system are devised.

The final stage of the PSRS is to have the attendees prioritize which actions should be pursued. In some cases, a pedestrian advisory panel is formed to monitor progress. In other instances, city personnel act on the recommendations.

The PSRS is an opportunity to educate a local area on their pedestrian safety issues and empower the community to take action to improve the quality of life locally. Additional resources include a 12-minute video titled, "WALK!", a Pedestrian Safety Resource Catalog, an overview of the process involved in a com-

munity pedestrian program, and a listing of technical resources. The website, http://www.ota.fhwa.dot.gov/walk, has been developed by the USDOT to provide more information on the Road Show.

Is the PSRS for your community? Take time to evaluate pedestrian routes for safety and walkability. Could they use improvements? Keep in mind that all trips begin and end as a pedestrian trip. School children and transit riders rely on safe walking routes to and from bus stops. The elderly and many others are dependent on good pedestrian walkways. ▲

Determine if Charles Dickens' vision for happiness and health is alive and well in your town. And if you are interested, please contact the USDOT to request a PSRS. The Road Show may be coming your way!!

Contact: Paul Harker by e-mail at paul.harker@nhtsa.dot.gov
Or contact Lorie Dankers at lorie.dankers@nhtsa.dot.gov
U.S. Department of Transportation
National Highway Traffic Safety Administration
(206) 220-7640.

WSDOT Libarary

TRANSPORTATION RESOURCE EXCHANGE CENTER T-REX

By: Claudia Devlin

The Transportation Resource Exchange Center (T-REX) (www.trex-center.org) provides answers to your questions on the transport of radioactive wastes and materials. It is a Virtual Library established as a cooperative effort between the ATR Institute (ATRI) at the University of New Mexico and the U.S. Department of Energy, National Transportation Program (DOE NTP). Subject areas are carriers, routes, education/training, packaging, tribal, public participation, states, environment, health laws, students/teachers and emergency management. T-REX technical researchers are available to assist with specific searches or data in this area.

A new feature at T-REX is TRAM, a searchable database of stakeholders involved in the process of shipping radioactive materials (www.trex-center.org/thetram.asp).

The TRAM is the only on-line, searchable directory that provides the data sets of General Area of Operation, Specific Expertise, Geographic Scope of Work and Internal/External DOE status for groups that are involved in radioactive material transport.

For technical assistance in using T-REX you can contact ATR toll-free at 1-877-287-TREX or by e-mail at trex@unm.edu

WSDOT Library Your infoLink

WSDOT Library:
www.wsdot.wa.gov//hq/library/
P.O. Box 47425
310 Maple Park Ave. S.E.
Olympia, WA 98504-7425
Phone: (360) 705-7750
Fax: (360) 705-6831

By Roger Chappell, WST2 Technology Integration Engineer WST2 Center

2001, A Geospatial Odyssey

With the dawn of the new millennium I pause and ask myself, where do we go from here? I wish I could get a definitive answer from HAL the computer on this one. Last year we talked about data inventory systems, GIS, GPS, Infrastructure Management, Asset Management and GASB 34.

With the speed that technology changes you don't need a crystal ball to prognosticate that change is inevitable. Looking back over the past ten years gives us a serious wake-up call to just how fast technology is moving. It also provides a reference for looking into the future.

Here are a few things we see in the near future that we've discussed in recent articles:

- GASB 34 (Governmental Accounting Standards Board Statement 34) is coming, and, to some extent, it will impact every governmental agency. GASB 34 requires financial accountability in the reporting of governmental assets.
- Asset Management is a concept many governmental agencies are adopting. It builds on Infrastructure Management by adding the dimension of financial accountability. Whether it is money, workforce, or materials, it makes good business sense to know how much you have, its current status, and how it is performing. Also, by having an Asset Management system in place, an agency will be in a position to use the "modified approach" to meet GASB 34 reporting requirements.
- Infrastructure Management makes good business sense for local agencies. It was defined in the last issue as "a holistic approach to managing complex infrastructure systems in order to maximize their efficiencies and resources for the benefit of all users." It provides a cohesive integration of pavement, safety, maintenance, bridge preservation, wastewater, solid waste removal and other management systems.
- GIS (Geographic Information Systems) are great tools to use to analyze and communicate various aspects of these complex systems, and to see their relationship to other systems that share common geographical space.
- GPS (Global Positioning System) is another great tool for locating "things" and their relationship to a known location on the surface of the earth.

We haven't even begun to discuss things like IMS (Internet Map Serving), B2B (Business to Business), B2C (Business to Customer), Internet Portals, and optimizing web applications over your intranet and extranet systems.

What is the future for these technologies? The mechanisms to implement these technologies will be getting smaller and faster, and will be constantly changing. Many of you reading this remember the Apollo lunar landing. Today, you have sitting on your desk and in your homes computers that are more powerful than the one used to put those men on the moon. Whatever the next five, ten or fifteen years hold for us; one thing is certain: Change is inevitable.

Being that I am considered by some to be a pseudo-techno guy, people ask for my advice about various technologies. Inevitably they find out that I have no crystal ball, and that I am not a prognosticator of the technological future.

What I write in these articles is not even "cutting edge" technology. Most of it is tried and true. For example, the military has been using GPS for many years. Some land surveyors have been using it for about ten years. Some surveyors are already on their second or third generation of equipment. Even though it was only popularized a couple of years ago for the general public, GPS has been in use for many years. I saw them put GPS on a D8 Cat a few of years ago and all of a sudden it appeared like we had something brand new. No, what we have is a D8 Cat with GPS and a fancy interface. Both the Cat and the GPS were old technology. I find that much of the "new technology" is simply an improvement of an existing technology, an integration of existing technologies, or simply a new application for an existing technology.

As in the Cat/GPS scenario, even when equipment or principles are tried and true, when they are applied in new ways there will be a learning curve to overcome in the new application.

For example, what happens when your new GPS spray rig is operating under a heavy tree canopy and you lose satellite lock? Does this mean GPS doesn't work? No, it only means that it won't work well under a heavy tree canopy. If the GPS data is important, you may need to look at other complimentary technologies such as inertial guidance systems — or wait until fall when the leaves have fallen from the trees.

Inertial guidance systems are modified versions of guidance systems like the ones used in rockets. They take a reading from GPS satellites and continue tracking positions using some arrangement of gyroscopes and clinometers with a timer or DMI (distance measuring instrument) until another GPS reading is obtained. If this doesn't work for you, you may be forced to use an LRS (Linear Referencing System) such as a milepost system.

What was once considered "rocket science" is now finding its way onto your desks, into your vehicles, and into your homes. A lot of the things scientists are thinking up today will in some form be our tools of tomorrow and they will be smaller, cheaper, more powerful and disposable.

What was once considered "rocket science" is now finding its way onto your desks.

I have built several sophisticated integrated systems myself. Here are a few nuggets I have gained from my own experience in the process.

Plug and Pray

Plug & Play is an oxymoron. A more accurate name is "Plug & Pray."

Vendors will promise the world, but don't buy unless you are willing to roll up your sleeves and do some of the research and development yourself.

Buy Off the Shelf

I like to buy "off-the-shelf technology" when I can. Some "black boxes" have a lot of sophisticated technology built into them and I like to throw them away and grab a new one easily if I need to. You don't always need to know everything about a "black box" to use it, but you do need to know enough to determine when and if it is working properly in your application. For example, you don't need to know the detailed inner workings of satellite communications or cellular technology to place a call on your cell phone.

Test! Test! Test!

My motto for using "black box" technology is test, test, and test it again before full production. It may look good on the drawing board or workbench but you need to test it in the environment that it will be expected to perform in. Once it is in production it is much harder to make changes. It requires a lot of work to go back and re-do work that has already been accomplished. When you test, be sure that the results are consistent and accurate.

Not All "Black Boxes" are Created Equal

Not all "black boxes" are created equal, even if the manufacturer says they are, or even if they look the same. The one you bought six months ago may have sat on a vendor's shelf for six months before you bought it, thus it may be subtly different from current versions.

Keep it Simple

Keep things as simple as possible. Although there are always fancier or more efficient ways of

doing things, the added sophistication usually increases complexity and potential for integration problems.

Use Proven Tools

Choose proven rock solid applications whenever possible. I try to wait until a component has proven itself as an "industry standard" before I integrate it into a complex system. The individual components of a system tend to be in constant state of dynamic evolution. The more that you integrate complex subsystems; the more dynamic the rate of change is in the entire system. You can save yourself a lot of grief if the components you select have the "bugs" worked out already.

Hold on to Things Loosely

Since components are in constant evolution you need to be flexible. I try not to hold on too tightly to any particular component of the system. It may change tomorrow.

Keep Track of the True Age of Your System

If dog years are seven years for every human year, then "computer years" are about twenty years for every human year. A four-year-old computer is equal to an eighty-year-old human when it comes to the latest technologies. If I were managing a system that involved the integration of leading edge technologies, I would attempt to maintain the system at some level of "computer years," say, sixty-computer years old, depending on the system's purpose. Much of this is decided by your individual budget constraints, but it should be considered in the longevity of any technological investment.

Keep Your Mind Open and Eyes Sharp

I have had some of my greatest successes from combining technologies from unrelated disciplines. In one of my recent experiments I took a series of still photographic images and stitched them together to form a 360-degree panoramic view. The software was easy to use and I got a free download from the web. Next I used GPS to get a location of the camera and then dropped the composite image into a GIS as a theme. The result? When you click on a roadway intersection located on the GIS map you are able view a continuous panoramic picture completely around the intersection as if you were standing in the center of it looking outward. At times integration of existing technologies can yield amazing results with little effort!

I hope that you find these nuggets helpful.

In conclusion, I would like to leave you with a quote from Theodore Roosevelt that I have hanging by my desk. I have read it many times in the midst of technology integration projects.

"It is not the critics who count; not those who point out how the strong stumble, or where the doers of deeds could have done them better. The credit belongs to the people who are actually in the arenas, whose faces are marred by dust and sweat and blood; who strive valiantly; who err, and come short again and again, because there are no efforts without error and shortcoming; but who do actually strive to do the deeds; who know the great enthusiasms, the great devotions: who spend themselves in a worthy cause, who at the best know in the end the triumph of high achievement, and who at the worst, if they fail, at least fail while daring greatly, so that their place shall never be with those cold timid souls who know neither victory nor defeat."

-Theodore Roosevelt

Roger Chappell
ChappeR@wsdot.wa.gov

All Roads Lead to…

By W. C. Evans, Local Technical Assistance Program (LTAP) Manager, USDOT-FHWA

Washington, D. C.— I love visiting this inspiring city. I hope that when you get there and have the ability, take some time to enjoy it! Recently, I picked up some information that I would like to share with you.

There is a great place to stand when you take a picture of the White House. It is called the Zero Milestone marker. It is a four foot high pink granite stone placed on the northern edge of the Ellipse, just south of the White House lawn. How did it get there?

In 1919, just after World War I and the beginning of the age of the motor car, several of the country's leaders were both inspired by the excellent roads in Europe that helped the Allied victory and disappointed in the US roads — of which there was no coast-to-coast road that was passable 12 months of the year. They decided to mount a self-sustaining cross-country military convoy of the vehicles that helped win the war. This 3,200 mile trek would test the military preparedness of the roads and let people see the economic importance of building better roads. The convoy was comprised of 81 motorized Army vehicles and over 200 men. It began its journey in July of 1919. A temporary Zero Milestone was placed at the starting point.

When you travel today's highways, it is hard to imagine the conditions that this convoy encountered. Traveling the first 46 miles to Frederick, Maryland, took them more than seven hours - on a beautiful day in July. More often than not, the going was difficult on the old Lincoln Highway that led west from Washington. On rainy days, the dirt roads, wheel paths and mountain trails were a mire of mud. Vehicles could not go under their own power and had to be pushed or pulled. Bridges had to be repaired or rebuilt. There were more than 200 accidents, mostly trucks overturning or running off the road. The convoy participants usually had five hours of sleep per day and had a small amount of food and limited drinking water. They averaged six miles an hour, thus covering about 60 miles a day. While it took 62 days to reach San Francisco, over three million people witnessed the event.

There is a great place to stand when you take a picture of the White House.

History is a funny thing. There were many young officers who accompanied this convoy, but one was named Dwight David Eisenhower - yes, the same person who became President. There is no doubt that this trip had a great impact on this 29-year old. Years later, during his presidency, he was a strong supporter of improving the country's road system. The Federal-aid Highway Act of 1956, which created the funding mechanism for the Interstate highway system, was passed during his administration.

Congress passed legislation for the erection of a permanent Zero Milestone on the Ellipse in 1920. It was a gift to the nation from the Lee Highway Association and did not cost the taxpayers a cent. The marker was dedicated on June 4, 1923, and it was a glorious affair. Six thousand engraved invitations were sent out, the US Army band played, and President Warren Harding gave a speech.

The Milestone marked the start of the convoy and it stands for something larger - the starting point of the future US highway system. Like the golden milestone in the Roman Forum, highway visionaries wanted the initial milestone to be the point from which all roads in the US and the Western Hemisphere would be measured.

A grand and glorious idea, but it was not to be. All roads may lead to Rome, but, today, not all US roads lead to Washington, D. C. ▲

WSDOT Davenport Maintenance Shop's Culvert Template

Tom Page, Maintenance Lead Tech, WSDOT-Davenport Shop, has the honor of having submitted the very first Better Mousetrap for the WST2 newsletter! It's a mousetrap that proves a great idea doesn't need to be complicated.

One of the duties of the WSDOT maintenance forces is to paint pavement markings to locate culverts. Maintenance crews originally had to bend over to lay the paint template down to paint the marking and then bend over again to pick it up. With a lot of culverts to mark, the Davenport crews found the constant bending to place and pick up the template caused back strain.

The maintenance techs came up with a very simple solution using available materials in the shop. Using a handle from a litter picker, worn out sign sheeting, and few rivets the crew created their Culvert Mark Template, simple template with a long handle. It's easy to make, compact, saves time and most importantly, eliminates the need to bend over saving your back.

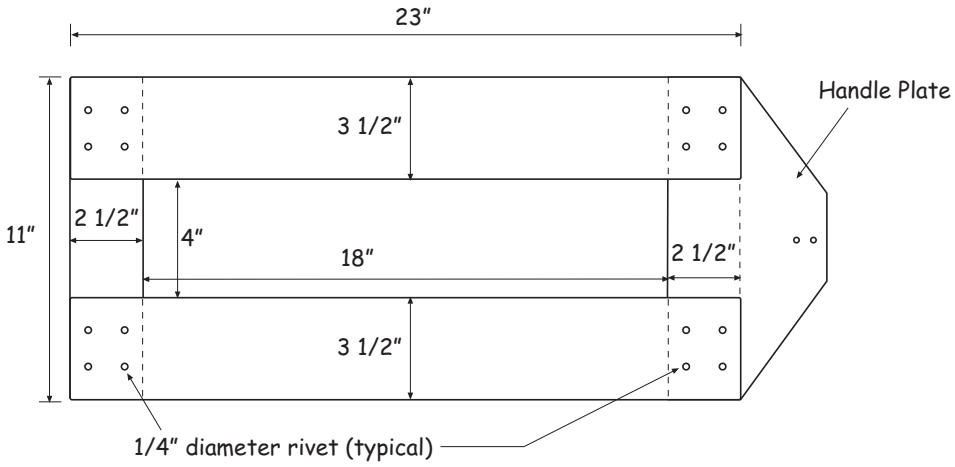
To make one of your own just cut pieces of a worn out or scrap sign sheeting into plates and rivet them together with 1/4"rivets. (See illustration for details.) Then, attach a claw-type litter picker handle or a section of 1/2" diameeter (or larger) plastic pipe as shown to form the extension.

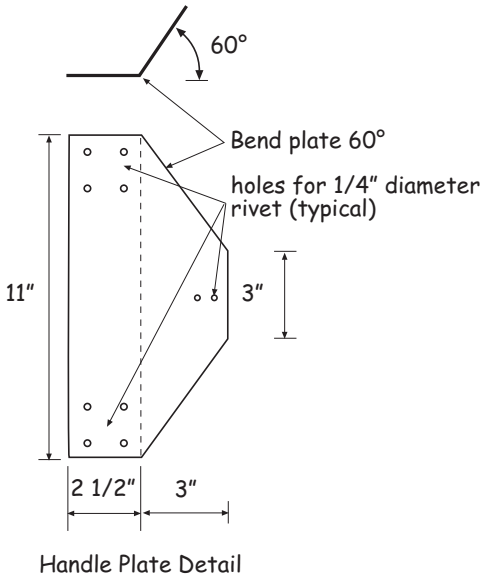
Tom notes, "The template works well and makes the job quicker with no back strain."

For more information you can contact Tom at (509) 324-6583.

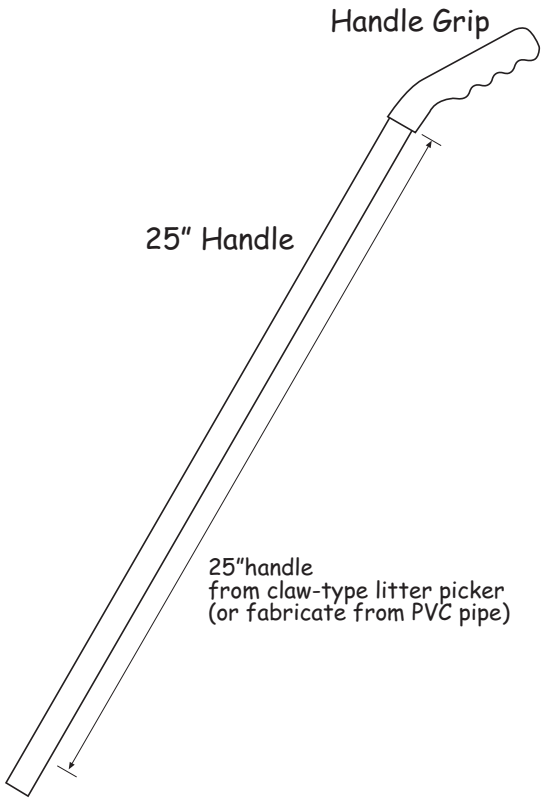
Tom Page with the template at the PNW Transportation Technology Expo last September 2000

So simple! So Functional!

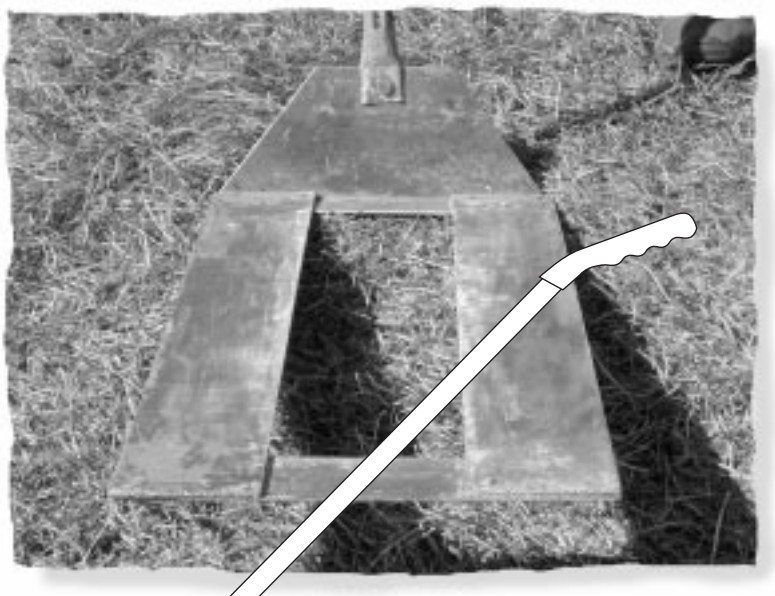


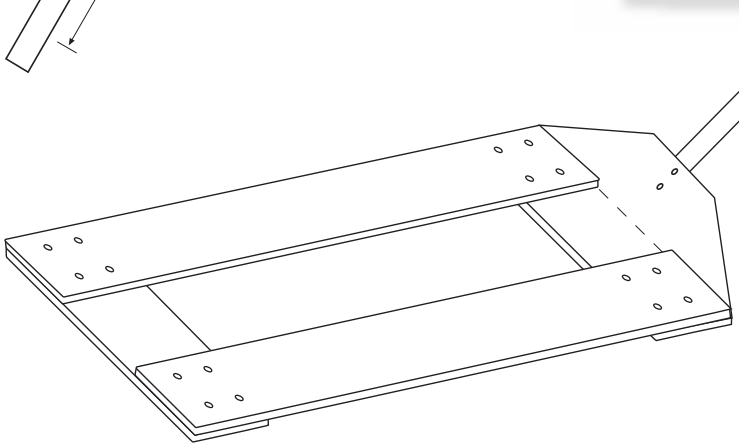


Handle Plate Detail



(Note: This is an early version of the paint template. For details on how to build the newer version see the illustration)





Bill Jantz's Catch Basin Grate Jack

Bill Jantz, Maintenance, Tech II of the WSDOT Marysville Maintenance Shop, has developed a handy tool for removing catch basin grates. After sitting in place for a while, catch basin grates tend to get "cemented" in place with fine sand, or they just fit tightly. Breaking them free and pulling on them to remove them can be difficult, and poses a potential for serious back, shoulder and arm injuries. Bill came up with a tool to help-- the Catch-Basin Lid Jack.

Bill's C-B Lid Jack is a 1-inch steel bar with a T-handle at one end and a hinged T-collar at the other. A 2 3/4" long x 3/8" plate "heel" is welded several inches away from the hinged T-collar to provide a fulcrum. The bar is bent 15 degrees at the "heel" to provide better leverage. The "Tee" shaped collar is attached to the end of the bar with a bolt to allow the collar to hinge. A person can insert the tool through the slots in the lid without bending over. See the illustration and photos for details.

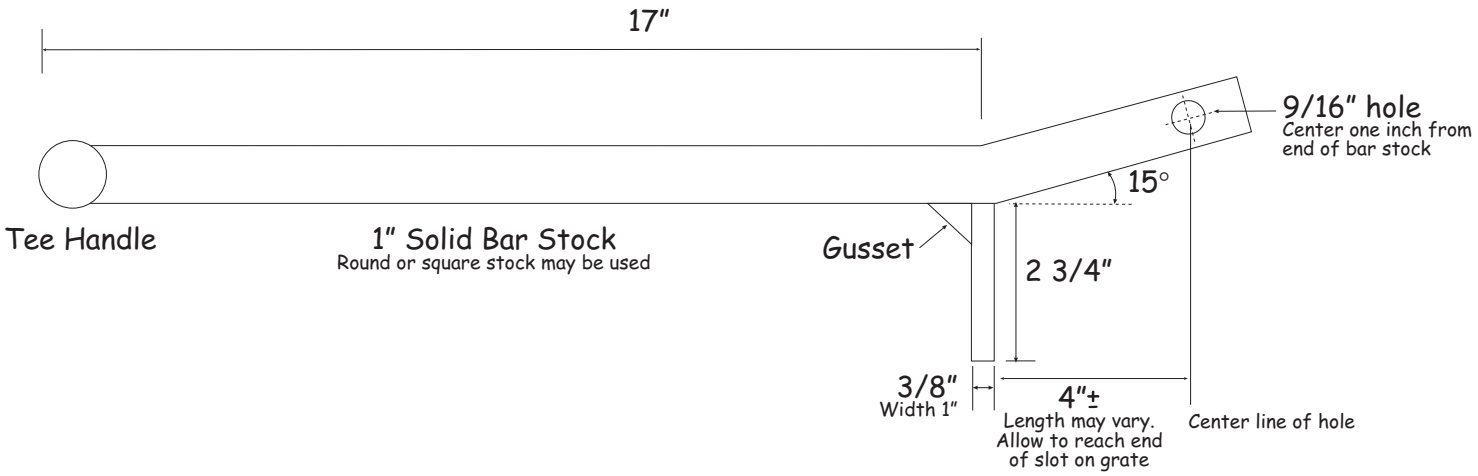
Using a C-B lid jack is simple. The Tee-collar is inserted into one of the slots in the grate, then slid to the end of the slot. The jack is then turned one-quarter turn to align with the direction of the slot and engage the tee collar. The bar handle is then pushed toward the ground. This places the jack with "heel" resting on the edge of the concrete basin, the collar locked in the lid and the handle slightly off the ground.

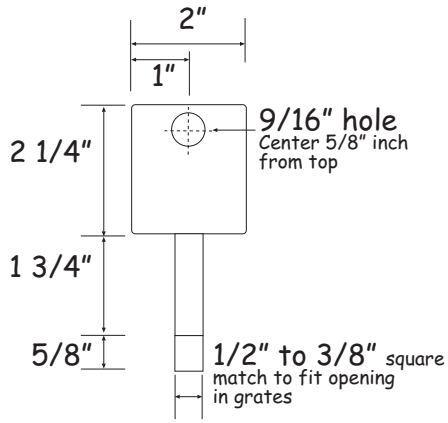
The person then steps on the handle, which forces the catch basin grate upward. A few pounds on the lid with a hammer and the lid should be loose. Once free the lid can be dragged away by pulling it with the T-handle.

Bill says, "It works excellent. It pulls the lid up from the short leverage point which greatly increases the pull."

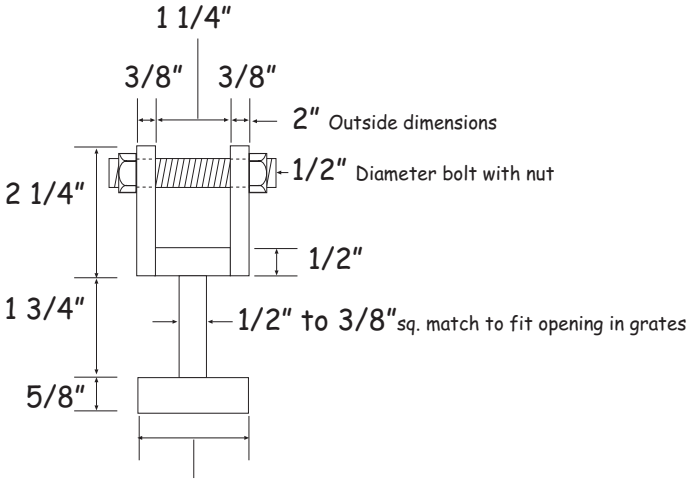
For more information you can contact Bill at: bj55crownvictoria@earthlink.net or (360) 652-8135.

Bill's catch basin grate Jack being demonstrated at the PNW Transportation Technology Expo at Moses Lake, Washington in September, 2000

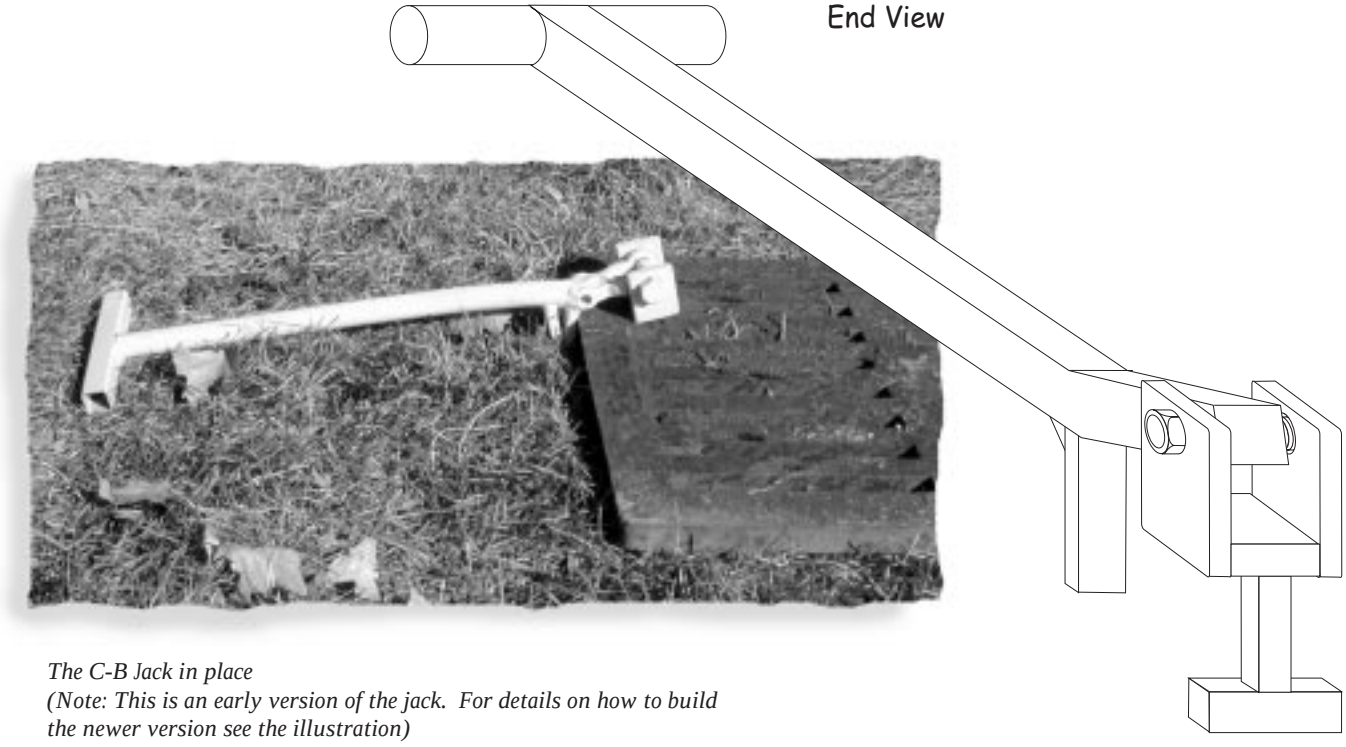




Side View



End View



The C-B Jack in place
(Note: This is an early version of the jack. For details on how to build the newer version see the illustration)

BUILD A BETTER MOUSETRAP
WST2

The "Better Mousetrap" is awarded each quarter for the most innovative working ideas presented by a public agency and published in WST2

Award:
The best concepts will be published in the WST2 and posted on the WST2 Web Page.

All entrees will receive a certificate.

All published mousetraps will receive a "Better Mousetrap" baseball cap.

All participants in published mousetraps will be included in competition for the annual "Crystal Mouse" award.

Eligibility:
Washington State Public Agencies.

Mail To:
"Better Mousetrap"
WST2 Center Transportation Building
P.O. Box 47390
Olympia, WA 98504-7390

E-mail:
WST2Center@wsdot.wa.gov

For questions:
Dan Sunde, Director of Technology Transfer
SundeD@wsdot.wa.gov
(360) 705-7390

"Better Mousetrap" Submittal Form

Name of the "Better Mousetrap":

Submitter's Name:

Title:

Agency:

E-mail Address:

Address:

City: State: Zip+4

Phone Number : ( )

Developer's Name(s):

Title:

Agency:

E-mail Address:

Address:

City: State: Zip+4

Phone Number : ( )

Description of the "Better Mousetrap"

Why was it necessary?

How does it work?

How was it built? (Include Sketches, Photos, Drawings)

How does it perform?

"Take" For Threatened Salmon is in Effect!

By Sandy Stephens, WSDOT-Maintenance Office

It's Here! "Take" for threatened salmon went into effect January 8, 2001!

As many of you may know, WSDOT and the Regional (previously the Tri-County) Road Maintenance Workgroup have been working to make sure that each of their individual road maintenance programs are consistent with each other.

WSDOT submitted the final draft of their Maintenance Manual for Habitat Protection to the National Marine & Fish Service on June 12, 2000. The Regional County Road Maintenance Workgroup submitted their program to NMFS in mid-December. Both groups (WSDOT & Regional) are waiting for NMFS approval of their respective program guidelines before proceeding with the next steps.

Remember! The "take" provisions are now in effect and we should be careful. You can minimize your risk of "take" by doing the following:

- Use maintenance specific BMPs (Best Management Practices) outlined in WSDOT Maintenance Manual for Water Quality & Habitat Protection or the Regional Road Maintenance Endangered Species Act Program Guidelines.

A copy of the regional maintenance guide can be found at:

http://www.metrokc.gov/roadcon/bmp/pdfguide.htm

- When working in water and doing work that could impact water, obtain a Hydraulics Project Approval (HPA) and follow the conditions written in it.

There are no "fish cops" out there observing our practices. Rather, NMFS is relying on the state resource agency inspectors and the public to report "take" situations. With the rule now in place, there is the potential for third party suits. NMFS has indicated that if we are following our program and a third party suite is filed, NMFS will testify to the fact that they are working with us toward an approved 4(d) program under Limit #10: Routine Road Maintenance.

The bottom line is this: Follow the BMPs in either program and the HPA conditions for the work activity.

"Follow the BMPs in either program and the HPA conditions for the work activity." ▲

If you have any questions, please contact Sandy Stephens at StepheS@wsdot.wa.gov or (360) 705-7853.

WSDOT Implements Survey Monument Database

-The First Step in the Survey Information System

By Kurt Iverson, Survey Manager, WSDOT Geographic Services

The accurate and efficient capabilities of new surveying systems such as Global Positioning Systems (GPS) and Digital Leveling equipment allow for an enormous amount of data to be collected in a short amount of time. Survey information storage has become a critical issue with respect to time, space, security and customer focus. Historically, WSDOT has had no up-to-date and effective facility to catalog, store and retrieve costly survey information pertaining to monuments or support data. The proposed solution to this problem was to create an on-line self-service archival and retrieval mechanism, whereby users could access and recycle previously collected data in a manner that would eliminate duplication of effort.

WSDOT's Geographic Services Geodetic Survey Section has addressed this by constructing the Survey Monument Database as the first step in building a complete Survey Information System (SIS).

The Need

WSDOT is currently involved in a department-wide effort to implement Global Position System technologies to gain increased accuracy and efficiency. Before SIS, no facility existed to catalog, store, and recycle this costly data that had been collected and processed. It made sense that after investing over $1,000,000 to purchase GPS equipment in the interest of gaining efficiency, that an effective system to help eliminate duplication of effort be developed. Also, by making collected survey data an "open book" accessible to all, agency accountability and public confidence would be increased.

1,000 customers per month access the Survey Monument Database

The Benefit

Currently, more than 1,000 customers per month, both internal and external to WSDOT, access the Survey Monument Database, avoiding costs estimated at $1,000,000 by eliminating duplicate efforts. These costs are estimated by assuming one-third of all customers find data that is valuable to their project at a rate of $3,000 per cost avoidance event.

Future development of an archival system that "backs up" survey data supporting the Monument Database will result in additional cost avoidance at a similar level. The quantity of data available will be proportionate to the increased number of stakeholders imputing data (6-7 times), thereby increasing the number of cost avoidance events to all users.

The Survey Information System offers these advantages:

- More timely access to data;
- Elimination of duplicate efforts;
- More efficient utilization of technical staff;
- Increased agency accountability;
- Better decisions based on more available data.

The development of a complete survey information system will provide a fire-safe, high-security, off-site mechanism for the $7 million worth of GPS data currently stored at Geographic Services and for each Region in the future.

What is the Monument Database?

The database is an efficient tool that can provide accurate positions to reference and catalog monuments for inventory purposes. Originally designed by Geographic Services for Primary Control, the system was expanded and made available to the WSDOT regions to utilize for right-of-way, alignment and other secondary control.

This database has been developed and maintained to provide storage and retrieval capabilities for data values associated with survey control monumentation.

The Survey Monument Database is a set of entities and attributes referenced to individual geographic locations, referred to as "point." Each individual point has a location relative to all other points in the database as referenced to a coordinate grid. The relative locations of the points represented in the database correspond to the actual physical or determined locations of Survey Control Monumentation. Attribute values of each point may contain accuracy data, physical descriptions of the monuments, descriptions for retracement and recovery, horizontal and vertical reference datums, dates of recovery, determination, origin of data values, and methods used for value determination.

Project reports by hard copy are also referenced by book and contract number, and are physically archived at Geographic Services. These reports contain all original instructions, maps, schematics, diagrams, existing control, obstruction diagrams, site log sheets, post processing information and copies of the minimal and fully constrained adjustments as well as geoid modeling data. Vertical control project reports contain instructions, maps, route schematics, copies of electronic collection of raw data, field book and adjustments. Copies of the existing control used to constrain the network are also included.

Who is the Originator and Maintaining Body?

The WSDOT Design Manual, M22-01, Section 1450.04 states:

"All control monuments that are established, re-established or reset must be filed with the county engineer, Geographic Services and the DNR."

The vehicle used for this purpose is the "Record of Survey Mark." It must be accompanied by a "Record of Monuments and Accessories" if used to reference right-of-way or land corners. As stated in Sections 1450.05, 1450.06, and 1450.07, both are required for alignment monuments, property corners and other monuments. This database was designed and constructed by Geographic Services for the purpose of tracking those monuments. Its use as a central mechanism will aid in fulfilling the obligations of Geographic Services and the WSDOT of contributing to the body of public record, thereby minimizing the duplication of survey work and the recording of monuments that are tied to a state plane and to a standard vertical datum.

WSDOT Geographic Services is solely responsible for maintenance and evolution of the database and maintains oversight of data entry at all levels.

The database is divided into seven components, one for Geographic Services and six for the WSDOT Regions. Geographic Services will maintain authority over Primary Control, while WSDOT regions will utilize and maintain authority over the Secondary Control. Key individuals in each Region, acting as external contributors to the database, will be responsible for the accuracy of their work.

Data Acquisition and Database History

This database represents a fourth generation of survey information systems within WSDOT. Previous card files and computer lists are generally not included in the Survey Monument Database, unless updated through modern procedures and techniques conforming to national standards.

Acquisition of information for primary control was originally made by transferring files stored in a D-base format, translated into to Microsoft Access and then to Power Builder.

The development of these modern systems coincided with the advent of the new North American Datum of 1983. Almost all primary control information presently exists as an adjustment of that datum occurring in 1991 (NAD83/91).

In 1997, Geographic Services participated with the Department of Natural Resources, Snohomish County, Pierce County, and Thurston County in the construction of a generic database. The object of this endeavor was to align items within data systems of individual entities. As archive and retrieval systems become more prevalent and practical, common elements are essential for data transfer between entities. The dialog of this committee and its product "Generic County Survey Monument Database," proved to be a valuable and useful tool in the compilation of the WSDOT Survey Monument Database.

The size and structure of survey data as it relates to WSDOT Geographic Information Systems (GIS) development required the migration from Access software to Power Builder, a WSDOT "level playing field" application. Although Power Builder required extensive resources in time and expenses beyond that of Access, it allowed the database to be fully integrated into department-wide GIS. ▲

For additional information, please contact Kurt Iverson at IversoK@wsdot.wa.gov or (360) 709-5532.

Dealing With Dangerous Mailboxes

By Andrea Hart, Resource and Information Assistant

Reprinted by permission from Nuggets and Nibbles, Vol. XVIII, Number 1, Winter 1999, Cornell Local Roads Program

Some unfortunate rural residents have had their mailboxes knocked down a half dozen times or more. The culprit may be a stray car, snowplow, mail carrier, delinquent juvenile, or any combination of these.

When faced with such mayhem, it is a normal human reaction to attempt to build the indestructible mailbox. Many postal patrons take their mailboxes incredibly seriously, viewing them as a creative link to, or extension of, their homes or businesses. They may resent regulations concerning their mailboxes. This dilemma sets the stage for all-too-common hazardous situations located in the rights-of-way along our highways.

It is estimated that 70 to 100 people in the United States are killed every year due to vehicles colliding with improperly designed or installed mailboxes. The ideal mailbox, consisting of a light sheet metal box securely attached to a wooden post or light gauge pipe, poses little threat to motorists when positioned correctly alongside an adequate turnout. It is the larger, more elaborate creations that cause problems. The family down the road may be the envy of the town with their perfectly scaled Eiffel Tower mailbox, but those carefully measured angles won't be so cute after being sideswiped by the county snow plow.

The American Association of State Highway and Transportation Officials (AASHTO) manual, "A Guide for Erecting Mailboxes on Highways," defines a roadside hazard as "Anything alongside a street or highway that is a possible source of damage or injury if struck by an errant vehicle." Massive mailboxes mounted on tractor wheels, plow blades, concrete-filled barrels and other such devices generally fall into this category of "roadside hazards."

Grouped or multiple mailbox installations also incur risks. The horizontal member, usually a wooden plank supported by two or more posts, is often set at windshield height, and when struck by a moving vehicle, has been known to impale or decapitate motorists. Multiple installation mailboxes have caused vehicle rollovers when the closely spaced mailboxes are pushed over on top of each other, creating a ramp that the vehicle careens off of. Another safety hazard, weak attachments between the post and box, can cause the mailbox to become airborne and potentially penetrate a vehicle.

Along with design problems, the risk factor increases due to improper placement of mailboxes, especially in rural areas where mailboxes may be on highly-traveled roads. Often, the mailbox may not be highly visible, have enough of a turnout area for both patron and postal worker, or may be located too close to an intersection.

Mailboxes should not be placed near sharp turns where motorists would be unable to see someone approaching or leaving the mailbox. Neither patron nor postal worker should have to walk more than 200 feet along the shoulder or have to cross a busy roadway or intersection to reach a mailbox.

If a mailbox is located too close to an intersection, a car stopped at the mailbox can obstruct the view of the upcoming intersection and traffic from other vehicles, increasing the risk of an accident occurring.

Any of these non-conforming mailbox designs and installations can contribute to vehicle accidents and damage. With a few precautions and adjustments, these accidents would have been entirely avoidable.

Wyoming and Wisconsin are two states that have taken an active part in reducing the amount of damage caused by the improper installation of mailboxes. The

Wisconsin DOT Districts spent one summer reviewing and inspecting unsafe mailboxes. Those not meeting their requirements were recorded and photographed and a letter and pamphlet explaining the danger were left with the homeowners. The letter advised each homeowner that if a crash were to occur, he or she could be liable for damages.

Wyoming implemented a similar program under which a landowner must obtain a right-of-way permit in order to install a mailbox, thus ensuring that the mailbox meets any and all requirements. For existing unsafe mailboxes, Wyoming used much the same tactic as Wisconsin. In both states, when compliance was not met by the landowner, the highway officials worked in conjunction with the postal service to encourage cooperation from the landowner, usually discontinuing mail delivery to that location until the mailbox was corrected.

General requirements for mailboxes state that the bottom of the box should be 42 to 48 inches above the ground. It is recommended that mailbox supports be at least three-fourths of their height away from each other, and be buried to a depth equal to one-fourth of their height.

For example, the post for a mailbox set 48 inches off the ground needs to actually be 60 inches long to allow for 12 inches underground. It must be placed at least 36 inches away from the nearest adjacent post.

Multiple mailbox installations should adhere to the same criteria of spacing as single installation mailboxes. Certain designs, such as the cantilever, are better suited for some places depending on individual climate conditions like snow and ice. However, this design can be dangerous, since the cantilever places the box directly at windshield height. A Guide for Erecting Mailboxes on Highways, published by AASHTO, more thoroughly discusses the pros and cons of different mailbox designs.

The placement of a mailbox depends on the type of road it is along. In general, it should have a shoulder turnout space that is sturdy enough to withstand vehicle traffic in all kinds of weather conditions.

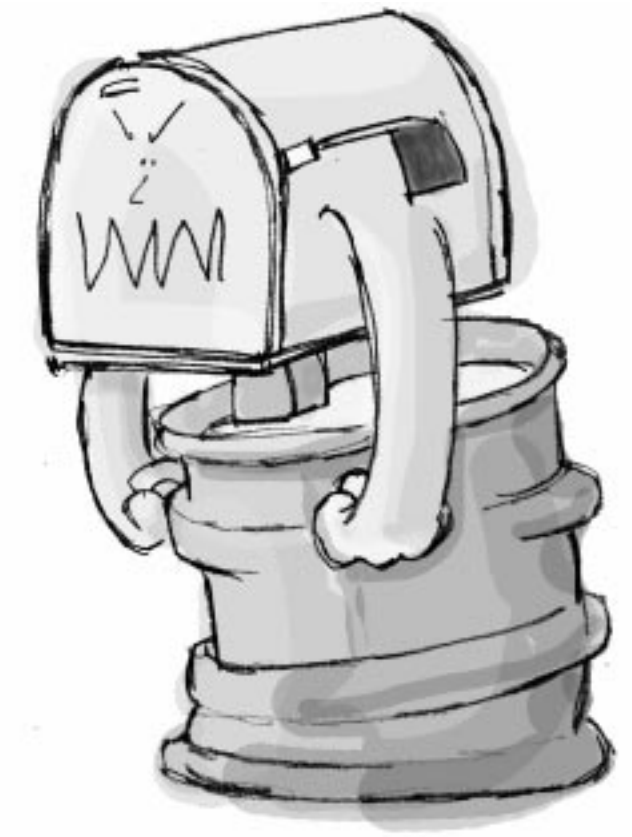
Mailbox placement should also keep patrons and postal workers from walking too far along busy roadways, and should never, under any circumstances, project onto the usable shoulder of the road.

Highway departments can and should have an influence on the erection of roadside mailboxes when they are placed in the highway right-of-way. While it might be tempting to take out the dangerously cute Eiffel Tower mailbox with a snowplow, a better approach would be to advise the owners of the mailbox about their potential liability. ▲

If you would like more information on mailbox specifications and installation guidelines, check out A Guide for Erecting Mailboxes on Highways, which can be found on the National Transportation Library's Web page at:

Http://www.bts.gov/NTL frames/SMART-RIGHT-OF-WAY@BTS.GOV.html
or it can be purchased from AASHTO by calling 1-800-231-3475, or by visiting the AASHTO website:

http://www.aashto.org



Pierce County Fights Sign Theft

A 24-hour hot line will allow residents to report missing signs

By Paula Lavigne Sullivan

Reprinted by permission from the Tacoma News Tribune, August 12, 2000

When they're hanging in dorm rooms, stashed in garages or dumped in a ditch, missing traffic signs can signal an accident waiting to happen.

Pierce County, Washington, Executive Doug Sutherland and representatives from the Pierce County Public Works and Utilities Department tried to make that point at a recent news conference. They held the news conference to announce a new 24-hour hot line for people to call to report downed or damaged signs. The department promises to respond to the calls within 24 hours. Though it maintains signs only in unincorporated Pierce County, workers will refer calls regarding signs in other jurisdictions to the appropriate agencies.

Sutherland and other officials also pointed to the county's recent recognition for its 5-year-old public service video, "Stop and Think," which shows the dangers of stealing or vandalizing road signs.

The county's production this year was incorporated into "Danger Signs," a videotape being distributed across the country by the American Traffic Safety Services Association, in partnership with the Federal Highway Administration.

The recent spotlight on stop signs is, in part, the result of a high-profile trial in Florida, in which three youths were convicted of manslaughter for removing a stop sign from an intersection near Tampa, where there was later a fatal car accident. Three 18-year-old men died when a truck struck their vehicle as they drove through an intersection where a stop sign had been removed. A judge sentenced the three youths who pulled out the sign to 15 years in prison for the Feb. 7, 1996 incident.

Three 18-year-old men died when a truck struck their vehicle as they drove through an intersection where a stop sign had been removed.

Jim Ellison, Pierce County Traffic Engineer, said he knew of no fatal or serious injury accidents here that happened as a result of a missing or damaged sign. The sheriff's department doesn't keep statistics on whether a missing or damaged sign contributed to an accident.

"That there's no record of serious accidents caused by missing signs on county roads is a credit to the department," said Thomas Ballard, Pierce County Engineer. He said crews try to fix or replace signs within a day of being notified.

Ellison said the department replaces or fixes about 17,000 signs each year at a cost of about $300,000 for equipment and labor. There are about 20,000 signs on county roadways.

"Some areas get hit worse than others," he said. "Vandalism in one area will peak for a few years and then taper off while it starts up in another area. It makes you wonder if it's one or two people doing the damage and if they've moved away," Ellison said.

"Signs are often victims of out-of-control drivers or children and college students playing pranks. Even if they don't cause an accident, the people who steal or damage signs can face a maximum sentence of one year in prison and $1,000 fine if they get caught," Ellison said.

High school driving instructors were using the Pierce County video in their classes and some students even took advantage of "sign amnesty" days where they could return stolen signs, no questions asked, Ellison said.

The video, which includes dramatizations and testimony from county workers, caught the attention of the American Traffic Safety Services Association in Fredericksburg, Virginia. David McKee, Director of Member Services, said. "The

Florida case made the Association see the value of the county's video. The Federal Highway Administration gave the group a grant of up to $25,000 to produce a video for national distribution."

ATSSA has sent out about 1,500 videos since February, according to McKee. The Federal Highway Administration has sent about 1,000.

Ellison said Pierce County, Washington area schools and other organizations can get copies of the video from the county for their own use. "We want to get this issue out so people can become aware of it. When they see vandalism they need to report it," Ellison said. "It could be a life-or-death situation." ▲

Staff writer Paula Lavigne Sullivan covers Pierce County for the Tacoma News Tribune.
Reach her at 253-597-8542 or paula.sullivan@mail.tribnet.com

NOTE: The WST2 Center has a limited supply of the video Danger Signs. If your Local Agency or School District would like a copy, please contact Dave Sorenson, Traffic Technology Engineer at (360) 705-7385 or e-mail SorensD@wsdot.wa.gov

Rolled-In Continuous Shoulder Rumble Strips

Reduce Run-Off-the-Road Crashes

Reprinted from: Research & Technology Transporter, USDOT-FHWA, July 2000

FHWA evaluated before/after projects on rural and urban freeways in Illinois and California that used rolled-in Continuous Shoulder Rumble Strips (CSRS). The data was taken from the Highway Safety Information System. Earlier studies of CSRS had resulted in effectiveness estimates of 15-70 percent. This study attempted to refine this estimate for rolled-in CSRS through the use of newer evaluation methods.

Two types of before/after study designs were used (i.e., "yoked" comparison sites and simple comparison sites). The combined rural/urban data from California showed a reduction of single-vehicle run-off-the-road crashes of 7.3 percent (a statistically non-significant result). The Illinois data for rural freeways showed a reduction of single-vehicle run-off-the-road accidents of 21.1 percent (a statistically significant result).

Basic cost-benefit analyses indicated that approximately one single-vehicle run-off-the-road accident (at an average cost of $62,200) could be prevented every 3 years based on an investment of $217 to install rolled-in CSRS for 1 km.

The 1997 statistics from the Fatal Analysis Reporting System showed that approximately 30 percent of fatal crashes involve single-vehicle run-off-the-road crashes. CSRS are installed as one of the measures to address this safety problem since most of these crashes are caused due to driver inattention/fatigue. ▲

The full study is published as "Safety Evaluation of Rolled-in Continuous Shoulder Rumble Strips Installed on Freeways" in Transportation Research Record 1665. More detailed information on the general topic of rumble strips can be found on FHWA's Safety Core Business Unit web page,

http://safety.fhwa.dot.gov/rumble-strips

Mike Griffith
(202) 493-3316
mike.griffith@fhwa.dot.gov

U-Place turns into safer place for traffic:

"CALMING:" City's work results in fewer accidents - and a national honor

By Cecilia Nguyen, The Tacoma News Tribune

The detours, construction noise and traffic delays along some of University Place's busiest streets have paid off, according to city officials.

Since 1996, the city has worked toward creating a safer environment for pedestrians, bicyclists and motorists. Adding bike lanes, building sidewalks and replacing turn lanes with medians and turn pockets are all components of the city's multi-million dollar road improvement "traffic calming" plan.

The results? "The frequency of accidents along well-traveled arterials such as Grandview Drive, Chambers Creek Road, and Bridgeport Way has been cut in half, and speeding in the area is down substantially," reported University Place Public Works Director Steve Sugg.

"Our goal was to install improvements that would improve the quality of life in University Place," Sugg said.

The effort hasn't gone unnoticed. The National Transportation Research Board in Washington, D.C., recognized the city's traffic calming accomplishments.

Of the $12 million spent on road improvements so far since city incorporation, nearly $4 million was City of University Place money. The remaining funds were grants and low-interest loans from both federal and state agencies. *[Editor's Note: The city of University Place was incorporated on August 31, 1995.]*

> ***"The frequency of accidents along well-traveled arterials such as Grandview Drive, Chambers Creek Road, and Bridgeport Way has been cut in half, and speeding in the area is down substantially."***
>
> *Public Works Director Steve Sugg*

"We've tried to use the limited dollars we have wisely," Sugg said.

"Prior to incorporation, speeding and traffic accidents posed a safety threat," he said. "The city initially thought police enforcement alone would decrease the high speeds and misuse of turn lanes, but [it] came to realize many motorists followed the traffic rules only when an officer was clearly present."

"Since implementing the traffic calming measures, accidents have decreased by 52 percent, and police have seen a 14 percent reduction in speeding," Sugg reported, "without lowering the speed limit or heightening traffic enforcement."

Cindy McKee also has noticed the changes. The University Place resident lives off Bridgeport Way near 30th Street West. She said she now feels safer driving along the bustling arterial.

"It's (Bridgeport Way) safer and looks so much better," McKee stated.

On the other hand, LeeAnne McClellan views the road improvements with mixed emotions. McClellan admits the streets are more attractive, but the University Place motorist thinks the U-turns at signaled intersections are awkward.

At Neon Tanning on Bridgeport Way, manager Kerrison Welcher believes the loss of the center turn lane has negatively affected the salon's business.

"It's now more difficult for the customers to get out," Welcher said. "They can only take a right turn."

But despite access complaints from businesses such as Neon Tanning, the medians and turn pockets don't seem to be affecting retail along Bridgeport Way, according to city Finance Director John Caulfield.

In 1999, a year after bike lanes and medians were installed, sales tax revenue within the town center area on Bridgeport Way West increased by 7.3 percent, similar to the rest of the city.

"That's a significant increase," Caulfield said.

Local residents aren't the only people taking notice of the road changes in University Place.

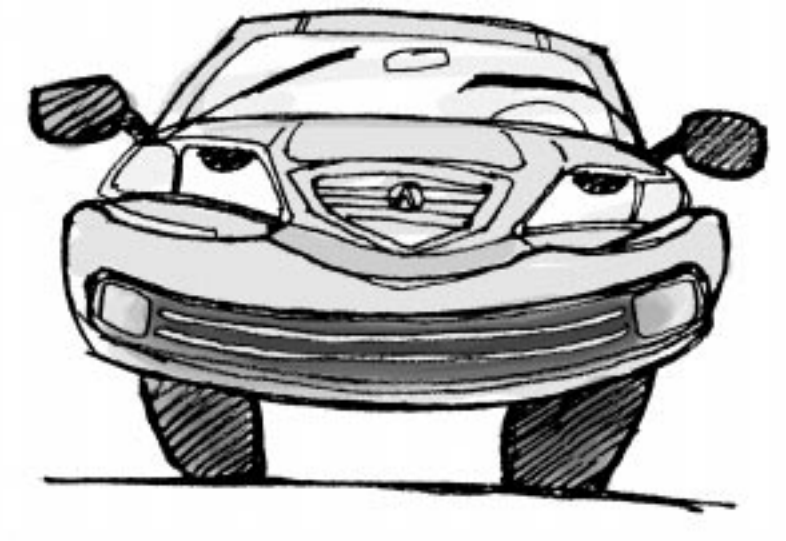
"University Place is the model for other communities," said Dan Burden of Walkable Communities, a nonprofit corporation helping cities build safer streets.

When the traffic consultant first arrived in University Place to help redesign the streets four years ago, he saw five-lane roads, no sidewalks, and streets with no character.

Fearing fewer lanes would result in gridlock and push cars into neighborhood streets, some residents resisted the change. But since applying many of Burden's ideas, road capacity actually has increased by 30 percent, and residents have commented on the aesthetic beauty of the landscaped streets.

"Today, University Place has the most modern policies and practices of any place," Burden said. "To make that switch in three years is beyond a dream." ▲

Adding bike lanes, building sidewalks and replacing turn lanes with medians and turn pockets are all components of the city's multi-million dollar road improvement "traffic calming" plan.



Placing Concrete Under Water

By Jim Hennen, South Dakota LTAP

Reprinted by permission from South Dakota LTAP Special Bulletin #34, TS 001 9/99

You may have helped a neighbor or friend place, finish, and cure concrete for a sidewalk or driveway. If so, you know that even under the best of conditions, it involves a lot of hard work.

There is one situation when you are working with concrete that limits the work to the placing of the mix. The finishing and curing magically take care of themselves. This labor saving operation takes place when the only way to get the concrete into its final resting place is to place it under water. The need to place the mix under water arises when it is not possible or practical to dewater the site. Such conditions exist when constructing substructure units for bridges crossing large bodies of water if the foundation seals must be placed at the bottom of cofferdams prior to being dewatered. The need for placing concrete under water also occurs when the water table is high enough to keep a caisson that has been designed as a concrete pile or column flooded.

The thought of having to place concrete under water can be unnerving if the basic principles of tremie concrete placement are not understood and followed. It is a mistake to assume that all will turn out well if we just close our eyes to the problems. We cannot simply let the fresh mix fall freely down a tremie tube that has not been properly sealed against water infiltration. Ignoring the proper steps for underwater concrete placement can result in badly diluted and segregated mix. This leaves us with nothing but washed sand and gravel instead of the concrete that was intended. A majority of the cement will be flushed out of the mix and be suspended in the free water.

The goal in correctly placing concrete under water is to have a minimum amount of contact between the fresh concrete and the free water into which it is being placed. An imbalance in the hydrostatic pressures between the fluid concrete and the water makes it possible to attain this goal. The hydrostatic imbalance is a result of the great difference in the unit weight of the fluid concrete (140 lbs./cu.ft.) and the unit weight of the water (62.4 lb./cu.ft.). For the sake of illustration, let us assume that a ten-foot deep caisson half full of water is to be filled to the top with concrete. The structural integrity of the concrete is an absolute must.

Figure One shows a tremie (a water-tight tube) resting on the bottom of a drilled caisson ready to begin concrete placement. The bottom end of the tremie has been sealed to prevent water from entering the tremie as it is lowered into position. The method used to seal the bottom of the tube must not only be capable of keeping the water out, but must also be capable of opening in order to

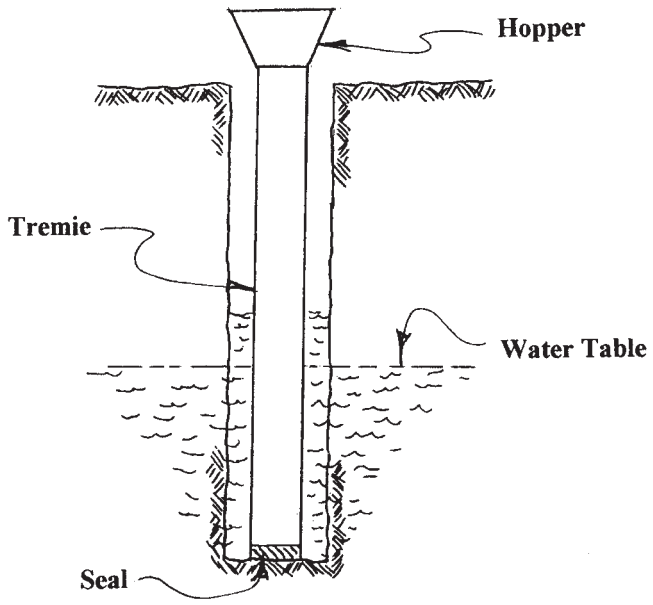


Figure 1: Empty tremie in place ready to receive the first charge of concrete. The tremie tube is essentially dry, the water having been kept out by the seal at the bottom.

let the concrete drop out at the appropriate time.

Figure Two shows the tremie and hopper filled with concrete. The seal is still in place and the bottom of the tube is resting firmly on the caisson bottom. It is at this point prayers are said since the critical first lift is about to be made.

The crane or other lifting device now begins to slowly lift the concrete-filled tremie and hopper. The initial lift should not exceed six inches. Care must be taken not to not jerk the system up but to have a steady upward force exerted by the crane once the concrete releases out through the bottom of the tremie. If release does not occur within a few seconds of the first lift, continue lifting using slow, even, shorter lifts until the concrete goes down with a "swoosh" sound. If the bottom seal released as it should, the concrete will drop down the tube and be deposited on the floor of the caisson. The snout of the tremie tube should be buried some distance into the deposited concrete and a look down the tube from the top should reveal concrete still in the lower portion of the tremie. If this is not the case and all you see is water, you did not pray hard enough prior to that first critical lift. If the water enters the tremie, it is time to start over from the beginning by pulling the tremie, resealing the bottom, and hoping for better luck the next time.

The snout of the tremie tube should be buried some distance into the deposited concrete and a look down the tube from the top should reveal concrete still in the lower portion of the tremie.

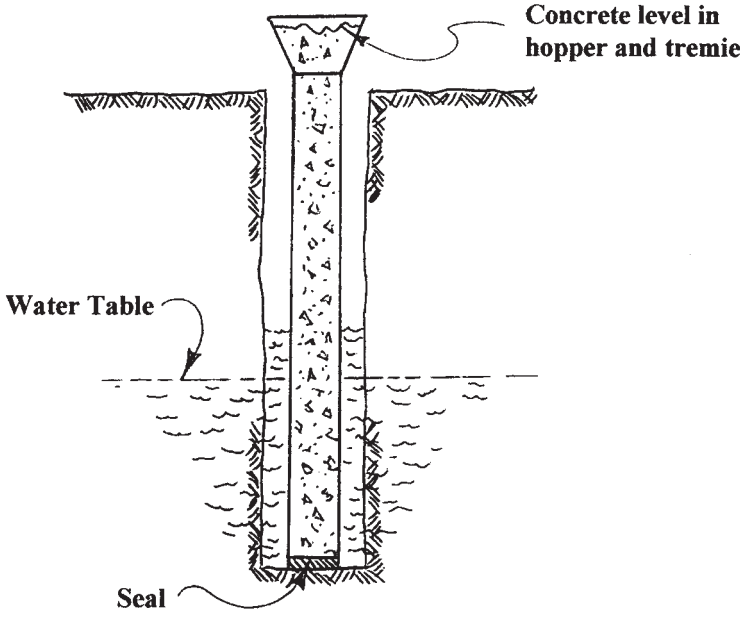


Figure 2: Hopper and tremie filled with concrete just prior to lifting the system and depositing the first charge of concrete

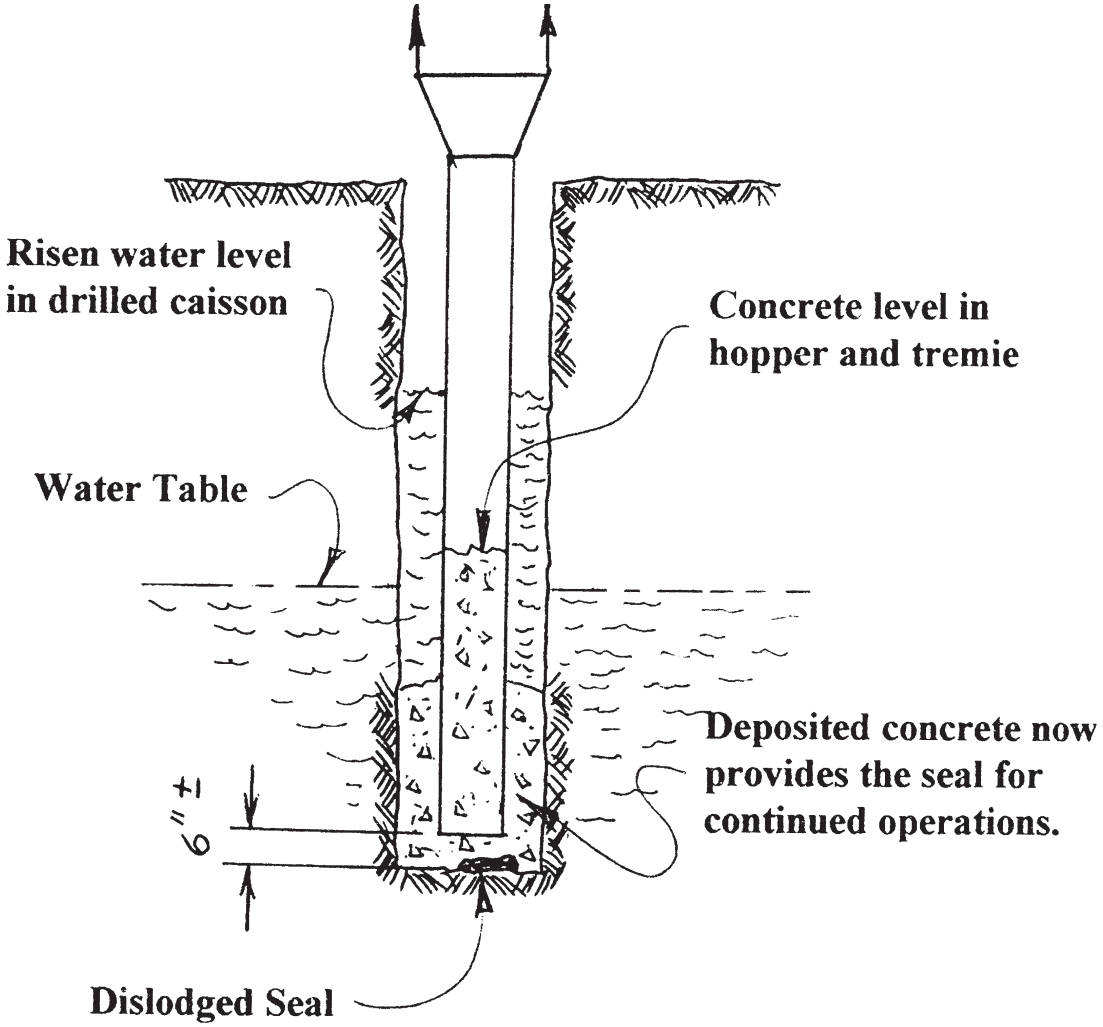
If luck was on your side the first time and concrete was in the tube following the first "swoosh" of the concrete dropping down into the intended position, it is just a matter of filling the tube and hopper, carefully lifting the same, hearing the "swoosh," seeing concrete in the tube again, and repeating this ritual until the concrete has reached the planned elevation.

As mentioned earlier, the success of this operation is made possible because of the great imbalance of hydrostatic pressures between the fluid concrete at 140 lbs./cu.ft. and water at 62.4 lbs./cu.ft. The ten-foot column of concrete standing at rest in the tremie prior to the initial lifting of the tube would be exerting a downward force of 1,400 lbs./sq.ft. (10 ft. x 140 lbs./cu.ft. = 1,400 lbs./cu.ft.), while the hydrostatic pressure of the

water is trying to hold the seal in place with an upward force of 312 lbs./sq.ft. (5 ft. x 62.4 cu. ft. = 312 lbs./sq. ft.). Naturally, the concrete wins. The seal is ejected and the column of fluid concrete drops rapidly (swoosh!) until its hydrostatic head is sufficiently low to come into balance with the entire opposing system of deposited concrete and the hydrostatic head of water. As long as the seal provided by the newly deposited concrete is not lost, the process of filling and raising the tremie is repeated until the desired concrete elevation is reached. All concrete deposited from this point forward never touches free water. If desired, once the concrete has set sufficiently, the very top of the caisson concrete can be chipped away to rid the concrete column of the thin laitance or watered down thin layer of concrete that resulted from the first charge contacting the water.

If the operation has been a total success, the final product will have the structural integrity desired since the only concrete that is ever diluted by free water is the very top surface of the initial discharge. All of the other concrete will never see free water. It will remain as though it had been placed in dry conditions.

There have been some really unusual schemes used to seal the bottom of the tremie. These provided the desired seal and yet gave a quick positive release when the lift was sufficient to cause the mix to drop. One that worked very well for the substructure contractor on Interstate 90 crossing Lake Francis Case at Chamberlain, SD, was to push a rubber basketball up the tube. It kept the water out, but it could not withstand the weight of a column of concrete at 140 lbs./cu.ft. once the tremie came off the cofferdam bottom. The diameter of the ball was slightly greater than that of the tremie tube, making for a nice tight fit. Once used, the ball was never seen again. The local sporting goods store did a land office business



The successful first lift with the original seal dislodged and the concrete now being placed free from any water contact except for the top interface.

in rubber basketballs until the foundation seals had finally been completed for the several large cofferdams.

On South Dakota Highway 34 over the Cheyenne River at Bridger, SD, there was a caisson application being used to underpin a scoured footing that was sitting just at the water's edge. The drilling was done on dry land but the shaft flooded up to water level, which was to be expected. The contractor doing the repair actually tried to tremie the concrete without using a plug or seal at the bottom. He was stopped immediately and given a short course on the proper method. He was not happy about the shut down, but was very pleased when he learned how well the system worked. When the work was completed, he felt pride in having produced a quality product. He used a three-quarter-inch piece of gasketed plywood tied to the tremie in a manner that allowed easy release.

Not all projects requiring underwater concrete are large construction or repair operations. Some years ago the SD DOT was installing frost-free benchmarks around the state. The design called for a capped pipe approximately twelve to fifteen feet long to be embedded in five feet of concrete at the bottom of a six-inch diameter drilled hole. Some of the drilled holes filled up with water before the pipe could be set. In these instances, to assure sound concrete at the bottom of the holes, personnel from the Rapid City Region DOT Materials Office borrowed the idea used by the contractor with the basketballs. A small PVC pipe was used as the tremie. The seal was provided using a rubber handball purchased at a local sporting goods store. "High fives" and shouts of "How good we are!" followed the eventual success of placing quality concrete under water even in this simple application.

Just remember that quality concrete can be placed under water by applying sound practices. These can be used by any one, not just by some giant international corporation working on a large structure spanning a bay somewhere halfway around the world. It has even been done successfully by two or three folks with a length of PVC pipe and a hard rubber handball installing frost free benchmarks in South Dakota. ▲

Some Basic Points To Remember In Placing Concrete Under Water:

Tremie Requirements:

Joints in the tremie tube, if any, must be gasketed to assure water tightness.

The watertight seal at the bottom must be easily dislodged upon lifting the concrete-filled tremie.

The empty tremie with hopper must be heavy enough to not be buoyant so it will sink to the bottom and rest there while the concrete is added.

Placing Requirements:

The lifting device must be capable of raising the tremie and hopper when they are full of fresh concrete.

The snout of the tremie tube must remain embedded in the fresh concrete until the pour is completed so as not to lose the seal provided by the concrete.

If loss of seal occurs, the tremie must be removed, resealed, and the entire operation started over again.

Concrete Requirements:

Use Class A concrete with ten percent extra cement.

Use as low a slump as possible that will still permit flow through the tremie tube. Four- to eight-inch slump will usually be sufficient depending on the size of the tremie.

Iowa Whitetopping – 20 Years and Still Going Strong

Reprinted from: CONCRETE PAVEMENT PROGRESS, ACPA, Vol. 36, No. 2, June/July 2000

Some people think whitetopping is a relatively new concept, but Iowa has been using the technique of concrete-over asphalt since 1960. A well-known innovator in concrete pavement, Iowa has been paving with concrete since 1904. Larry Penn, assistant to the Dallas County engineer for construction, started working with concrete pavement in Iowa in the late sixties. "The concrete roads built when I started 37 years ago are now needing attention," he said. "Concrete is an excellent product."

This belief seems to be fairly widespread throughout Iowa, and has led Iowa counties to consider concrete overlays as a way to decrease maintenance costs and lengthen the rehabilitation cycle for asphalt pavements. In addition to its long life, whitetopping has proven extremely economical to build.

Boone County Iowa utilized whitetopping as an innovative technique in the early 1970s.

A New Era Begins

During the sixties and early seventies, Iowa saw limited use of whitetopping. But in 1977, three Iowa counties - Dallas, Boone, and Washington - each constructed their first whitetopping project. "It was experimental," said Penn. "We'd been through several cycles of asphalt. We wanted to see if whitetopping could be done easily and would last." The three projects varied in size from one mile to nine miles, built on approximately 20-year-old asphalt roads rutted and cracked by heavy farm traffic, mostly grain and manure wagons. "The old asphalt seal coat road, cracked, with wheel ruts and three to four-inch crown was the perfect template for what we wanted for our first whitetopping," said Bob Bauer, Washington County Engineer.

Since then, Iowa counties have constructed an average of 19 miles of whitetopping per year. Over the past 22 years, county engineers have worked to perfect the technique, experimenting with different surface preparations, overlay thickness, concrete mixtures, and joint spacing.

Surface Preparation

Through experience, the county engineers discovered the best surface preparation was no preparation at all, other than cleaning with a power broom. "We milled the existing asphalt for our first overlay, then decided that it was a waste of time and money on future projects," said Penn. "Ninety percent of our overlays we just broom sweep," said Boone County's Assistant Engineer, Bob Kieffer. The extra PCC thickness in the wheel ruts and along the lowered edges of the road was exactly where the extra strength was needed.

Overlay Thickness

All three counties went with a nominal 6-in. thick PCC for their first overlays, which actually meant the whitetopping was about

five inches at the center of the road, and six or seven inches for the outer edges.

According to Penn, Dallas County has tried a variety of overlay thickness, and settled on five inches of concrete as the optimum design. "We tried six inches of concrete, but thought that was overkill," he said. "For normal traffic, five is plenty." Dallas County even tried a 4-in. overlay, but found it required more patching than the thicker pavements.

Proof of whitetopping's longevity – Boone County in 1999.

Bauer reported that in recent years Washington County has added an inch of thickness for a total of six inches – to extend the life of their current whitetopping projects. "I'm a firm believer in the incremental inch," he said. "We've got to design for a 50-to 60-year pavement life, or we can't afford the upkeep on our existing paved road system."

Concrete Mix

When the first overlays were constructed in 1977, the counties all used the Iowa B concrete mix, a five bag mix. "For our last couple whitetoppings we went to the 6-1/2 bag C mix for a faster job," said Kieffer. Penn reported that the old Class B mix required the road to be closed for two weeks after placement, and class C allows the opening to traffic after seven days. Penn also mentioned the county is very interested in the maturity method of testing CC strength. The use of the maturity method typically allows agencies to open newly paved concrete roads after only three days.

Joint Spacing

The three counties have used various joint spacing for their whitetopping projects over the past 20 years. Boone County has tried 15, 20, 25, and 40-ft. spacing. Currently the county is using 15-ft. spacing and skewing the joints 15 degrees to improve load transfer.

Dallas County started out using 30-ft. spacing, and now has settled on 15 ft. as a standard. Washington County also is currently going with 15 ft.

How They're Holding Up

The 1977 whitetoppings are all performing well after 22 years of heavy farm machinery and grain wagons. The 9-mile Washington County whitetopping receives 2,000 vehicles a day. "It's holding up real fine," said Bauer. "Other than touching up the shoulders and repainting the lines, we haven't had to do any maintenance on it. We're real happy with it."

Dallas County also remains pleased with the performance of their original whitetopping project.

"Even with traffic up 30 percent, we've had no need to repair the road at all," said Kieffer.

The Future

Since the 1977 job, Boone County has done 40 miles of PCC over AC. "When we constructed the original project, we were hoping for a 20-year life," said Kieffer. "I see no reason why it won't last at least another ten years beyond that."

Because of the excellent base on the original road – three inches soilite, six inches rolled stone – Penn expects the 1977 Dallas County whitetopping to last 30 years.

The Washington County overlay is in similar condition. "It's over 20 years old now, and we're not even thinking about doing any work on it," said Bauer. ▲

What's GASB 34 — and Why Should You Care?

By Tom Maze, Transportation Section Leader, Howard R. Green Co.

How do you report infrastructure investments?

Traditionally, state and local governmental agencies have used cash accounting methods to report infrastructure assets like roads, bridges, water and sewer facilities, dams, etc. With cash accounting, the capital cost of an infrastructure investment appears in an agency's annual financial report during the year in which the cost of construction is incurred; the value of existing physical assets does not appear on financial reports. In other words, using cash accounting methods, the value of all physical assets is off the books.

In actuality, of course, physical infrastructure like roads and bridges generally continues to have value, or usefulness, long after agencies have incurred the cost of construction. And, just as cars depreciate in value, the value or usefulness of roads, bridges, and other physical assets declines over the course of many years, typically 20 to 50 years.

A more realistic report of an agency's financial status would therefore show the existing value of the agency's capital assets. Under this accounting method—accrual accounting—the cost, or the loss in value, of an asset is spread across the asset's useful lifetime rather than accounted for in its first year. Accrual accounting keeps infrastructure assets on the books and is more consistent with the reporting of other costs of doing business.

The Governmental Accounting Standards Board (see box to left) has been carefully studying the valuation of government-owned bridges, water and sewer facilities, and dams in their annual financial reports on an accrual accounting basis. If fact, the board issued its first concept statement regarding this issue as long ago as 1987. Finally, in June, 1999, GASB Statement 34 (or GASB 34) was published. GASB 34 requires state and local governments to begin reporting the value of their infrastructure assets, including roads, bridges, water and sewer facilities, and dams, in their annual financial reports on an accrual accounting basis.

Why the Change?

Accrual accounting methods are generally the standard in the private sector.

Where does GASB get its authority?

The Governmental Accounting Standards Board (GASB) is a nonprofit entity responsible for establishing accounting standards–or generally accepted accounting practices (GAAP)–for state and local governments. Along with its sister organization the Financial Accounting Standards Board (FASB), which sets accounting standards for the private sector, GASB is operated by the privately funded Financial Accounting Foundation.

Although there is no legal requirement that all government agencies follow GAAP, it is generally prudent business practice to do so. For example, public agencies follow GASB standards in order to obtain clear opinions from their auditors. Even more important, following GAAP will likely reduce the cost of issuing debt through general obligation or revenue bonds. Bonding organizations want to see (1) a government agency's true financial condition and (2) accounting information based on GAAP. Communities that don't follow GAAP may pay more to issue debt in terms of their bond rating.

When most of us see an annual report, we therefore expect to see an accounting of the remaining useful value of all assets. By bringing public agencies in line with accounting norms, GASB 34 has the potential to make agencies' overall financial condition more comprehensible to the public, investors, creditors, and the agencies themselves.

The principle purpose of Statement 34, then, is to "improve the accountability of governments to their citizens by providing better, more accessible information about the condition and costs of capital assets."[1]

Ultimately, the new standards may encourage better stewardship of public resources. By reporting the value of public assets over time, governmental agencies will make their improvement—or lack of improvements—in public assets more apparent.

Who's affected, and how soon?

The new requirements for reporting physical assets will be phased in, beginning with the largest governmental agencies (see table). In the first year that agencies are required to report the value of capital assets, they need only report the value of newly acquired or built capital assets. That is, they need only comply with GASB 34's prospective reporting requirements.

Agencies with $100 million or more per year in revenue must meet prospective reporting requirements for the fiscal year beginning after June 15, 2001.

Those with annual revenues of $10 million to less than $100 million have until the fiscal year beginning after June 15, 2002, to meet prospective reporting requirements.

Smaller agencies with less than $10 million in annual revenue have until the fiscal year beginning after June 15, 2003, to comply with prospective reporting requirements.

Agencies then have four more years to comply with GASB 34's *retroactive reporting requirements;* that is, they have four more years to determine and report values for their preexisting capital assets.

Agencies with $100 million or more per year in revenue must meet retroactive reporting requirements for the fiscal year beginning after June 15, 2005.

Those with annual revenues of $10 million to less than $100 million have until the fiscal year beginning after June 15, 2006, to meet retroactive reporting requirements.

Smaller agencies with less than $10 million in annual revenue are encouraged but not required to report infrastructure values retroactively.

What's next?

Basically, GASB 34 allows two methods for assessing the value of infrastructure: the depreciation approach, and a modified approach. In upcoming issues of WST2, we will discuss these approaches and other issues related to meeting GASB 34 requirements. ▲

Schedule for Complyling with GASB 34 Reporting Requirements

Reporting Requirements	Agency's Annual Revenue		
	$100 million or more	$10 million to less than $100 million	less than $10 million
Prospective	fiscal year beginning after June 15, 2001	fiscal year beginning after June 15, 2002	fiscal year beginning after June 15, 2003
Retroactive	fiscal year beginning after June 15, 2005	fiscal year beginning after June 15, 2006	encouraged but not required to report

You might visit the web site of the Governmental Accounting Standards Board,

www.rutgers.edu/Accounting/raw/gasb/

for a summary of GASB 34 and related information.

[1]*Terry K. Patton and Penny S. Wardlow, "Why Infrastructure Reporting?" GASB Action, Vol. 16, No. 5, May, 1999*

Reprinted with permission from Technology News, a publication of Iowa State University's Center for Transportation Research and Education (CTRE), January-February 2000.

Publications from your WST2 Center

WST2
HIGHWAYS & LOCAL PROGRAMS SERVICE CENTER

Free Publications from Your WST2 Center
For Washington residents only due to limited quantities.

Name _____

Agency _____

Mailing Address _____

City _____ State _____ Zip+4 _____

Phone _____ Fax _____ E-mail _____

Fax, e-mail, phone, or mail your order to:
Fax: (360) 705-6858; E-mail: WST2Center@wsdot.wa.gov; Phone: (360) 705-7386;
Mail: WST2 / WSDOT, H&LP, P.O. Box 47390, Olympia, WA 98504-7390.

This order form is available on the WSDOT Homepage at:
http: www.wsdot.wa.gov / TA / T2Center / T2PUBS.htm

Check the items you would like to order.

- ☐ 1999 Audio Visual Catalog, T2Center
- ☐ Asset Management Primer, FHWA, 1999
- ☐ Asphalt Seal Coats, WST2 Center (1999 Reprint)
- ☐ Asphalt Pavement Repair Manuals of Practice, SHRP, 1993
- ☐ Comparison of Three Compactors Used in Pothole Repair, CRREL, 1984
- ☐ Contracting for Professional Services in Washington State, MRSC, 1994
- ☐ Engineer's Pothole Repair Guide, US Army Corps of Engineers, CRREL, 1984
- ☐ Family Emergency Preparedness Plan, American Red Cross, et al.
- ☐ Financing Federal Highways, FHWA, 1999.
- ☐ Fish Passage Through Culverts, FHWA, USDA, 1998
- ☐ Fly Ash Facts for Highway Engineers, FHWA July 1986
- ☐ Geotextile Selection and Installation Manual for Rural Unpaved Roads, FHWA - 1989
- ☐ Getting People Walking: Municipal Strategies to Increase Pedestrian Travel, Rhys Roth, Energy Outreach Center
- ☐ Gravel Road Test Sections Insulated with Scrap Tire Chips, CRREL 1994
- ☐ A Guide to the Federal-Aid Highway Emergency Relief Program, USDOT, June 1995
- ☐ A Guide for Local Agency Pavement Managers, NWT2 Center, 1994
- ☐ A Guidebook for Residential Traffic Management, NWT2 Center, 1994
- ☐ A Guidebook for Student Pedestrian Safety, KJS, 1996
- ☐ A Guide for Erecting Mailboxes on Highways, AASHTO, 1984
- ☐ Highway / Utility Guide, FHWA 1993
- ☐ Improving Conditions for Bicycling and Walking, FHWA, 1998
- ☐ Improving Highway Safety at Bridges on Local Roads and Streets, FHWA, 1998
- ☐ Innovative Materials Development and Testing Volume 2: Pothole Repair, SHRP, NRC, 1993
- ☐ International State-of-the-Art Colloquium on Low-Temperature Asphalt Pavement Cracking, CRREL, 1991
- ☐ Local Agency Safety Management System, WSDOT, 1998, Reprinted 2000
- ☐ Local Low Volume Roads and Streets, ASCE, 1992
- ☐ Maintenance of Aggregate and Earth Roads, WST2 Center (1994 reprint)
- ☐ Manual of Practice for an Effective Anti-icing Program: A Guide for Highway Winter Maintenance Personnel, FHWA, 1996
- ☐ New Generation of Snow and Ice Control, FHWA
- ☐ Pavement Surface Condition Field Rating Manual for Asphalt Pavement, NWPMA, WSDOT, 1999
- ☐ Problems Associated with Gravel Roads, FHWA, 1998
- ☐ Pedestrian Facilities Guidebook, WSDOT, 1997 ($12.00 + postage outside Washington State)
- ☐ Pothole Primer – A Public Administrator's Guide, CRREL, 1989

- ☐ Rating Unsurfaced Roads, A Field Manual for Measuring Maintenance Problems, CRREL
- ☐ Recommendations to Reduce Pedestrian Collisions, WSDOT, December 1999
- ☐ Redevelopment for Livable Communities, Rhys Roth, Energy Outreach Center, 1995
- ☐ Scrap Tire Utilization Technologies, NAPA, 1993
- ☐ Sidewalk Details, WSDOT, 2000
- ☐ State-of-the-Art Survey of Flexible Pavement Crack Sealing Procedures in the United States, CRREL, 1992
- ☐ Superpave System – New Tools for Designing and Building More Durable Asphalt Pavements, FHWA
- ☐ Technology Information At Your Fingertips, A Directory of Information Resources for Improving Transportation Technology - FHWA
- ☐ Traffic Calming: A Guide to Street Sharing, Michael J. Wallwork, PE, 1993
- ☐ Use of Scrap Rubber in Asphalt Pavement Surfaces, CRREL 91-27
- ☐ Utility Cuts in Paved Roads, Field Guide, FHWA, 1997
- ☐ W-Beam Guardrail Repair and Maintenance, FHWA

Workbooks and Handouts from WST2 Center Workshops

- ☐ Access Management Guidelines for Activity Centers, NCHRP Report 348, TRB / NRC, 1992
- ☐ Flagging Handbook, ATSSA, 1999
- ☐ Handbook for Walkable Communities, by Dan Burden and Michael Wallwork
- ☐ Highway Maintenance Welding Techniques and Applications, Tom Cook, Cornell Local Roads Program, 1995
- ☐ Historic and Archeological Preservation: An Orientation Guide, FHWA / NHI
- ☐ Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas, TRB
- ☐ Part Vl Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations (MUTCD) FHWA, September 3, 1993
- ☐ Pavement Maintenance Effectiveness / Innovative Materials Workshop Participant's Handbook
- ☐ Snow & Ice Control Chemicals, Theory & Practice, Dale G. Keep, Ice & Snow Technologies, LLC,
- ☐ Transit Manager Toolkit, TRB, NRC
- ☐ Wetland Evaluation Technique (WET), Volume II Methodology, U.S. Army Corps of Engineers, 1993

Non-Credit Self-Study Guides

These non-credit self-study guides are available through WSDOT Staff Development, and may be obtained from the WST2 Center. An invoice will be sent with these non-credit course materials.

- ☐ Basic Surveying, $20
- ☐ Advanced Surveying, $20
- ☐ Contract Plans Reading, $25
- ☐ Technical Mathematics l, $20
- ☐ Technical Mathematics ll, $20
- ☐ Basic Metric System, $20

Computer Programs

The following computer programs may be downloaded from the Internet at: *http//www.wsdot.wa.gov/TA/Operations/Environmental/Soft.htm*

Everseries Pavement Analysis Programs: This series of programs contains three independent modules:

1. **Evercalc 5.0** – A FWD Pavement Moduli Backcalculation Program
2. **Everstress 5.0** – A Layered Elastic Analysis Program
3. **Everpave 5.0** – A Flexible Pavement Overlay Design Program

IMPORTANT:
These programs are updated on a regular basis. Please send your e-mail address to SivaneN@wsdot.wa.gov to be included in the mailing list.

HyperCalc - A shareware utility for converting between metric and English units

APWA Cad Symbol Standards and Menus - A public domain program of standard AutoCAD symbols developed by the Washington Chapter of APWA for use with AutoCAD release 14. The program may also be downloaded at http: / / users.ap.net / ~fredlee

FWD Area Program - This program is useful in calculating Normalized Deflections Area Value, and Subgrade Moduli from FWD Data.

STIP Too Application (Version 3.3 from 6 / 21 / 2000) – This program enables you to manage your Six Year TIP (Transportation Improvement Plan) and send it to your MPO / RTPO and / or your Regional Local Programs Office for inclusion into the STIP (Statewide Transportation Improvement Program).

On Screen Forms:

- ■ Progress Billing Form (Excel)
- ■ Local Agency Agreement (Form 140-039)
- ■ Local Agency Agreement Supplement (Form 140-041)
- ■ Federal Aid Project Prospectus (Form 140-101)
- ■ Environmental Classification Summary (Form 140-100
- ■ Bid Proposal Package
- ■ Safety Management System Application
- ■ BRAC Funding Application

Manuals:

- ■ A Local Agency Guide to Pavement Management / Streetwise Manuals
- ■ The Local Agency Guidelines (LAG) Manual
- ■ The Local Agency Safety Management System Manual
- ■ The STIP Too version 3.3 manual

Student Job Referral Program for Summer 2001

By Laurel Gray, WST2 Training Coordinator

Once again the Washington State T2 Center will be offering a summer job referral service to local agencies and civil engineering and technical students. This program is designed to assist local agencies in hiring students enrolled in transportation related engineering and technical fields for summer employment.

Many agencies need summer help in areas such as inspection, engineering support, park maintenance, roadway inventory, mapping, GPS surveys, construction staking, roadway maintenance, record keeping, drafting, field surveying, traffic counts and many other areas. Hiring students who are going into the public works field is a logical way to go. This program can benefit both the agency and the student. The agency hires a motivated student familiar with public works who may return from summer to summer until graduation and perhaps even hire on after graduation. At the same time, the students will gain valuable work experience in their chosen field of study.

As your agency makes plans to hire summer help, let the WST2 Center know of your job openings and we will advertise them on our web site. Instructors and students in all the colleges around the state with civil engineering and technical programs have been notified and advised to watch this web site for potential openings in their home areas. They can then make direct contact with your agency. Last year over 90 positions were advertised for 15 agencies. The web site is up and running for year 2001. Letters have been sent to all public works directors in the state telling them about this program, and a form was included which asks for the types of work available, number of positions and closing date. This form is also available on the web site and can be downloaded, filled out and faxed to us at (360) 705-6858.

http://www.wsdot.wa.gov/ta/t2center/srs.htm

If you would like to advertise openings in your agency, Contact Laurel Gray at (360) 705-7355 or e-mail GrayL@wsdot.wa.gov.

Washington State T2 Center

Contact: Wendy Schmidt
phone: (360) 705-7386
web: http://www.wsdot.wa.gov/TA/T2Center/TRAIN2.HTM

To register for a class in this category use the contact listed above.

Tuition Fee: Local Agencies / Consultants

Right of Way Procedures Workshop

April 2, Shoreline. **No Fee**.

LAG Training Program

The above Right of Way Procedures class is part of a larger program being developed to present training to local agencies on chapters in the Local Agency Guidelines Manual. All courses will be ready for scheduling by fall 2001 and will be available from fall through spring yearly. If you have questions contact Darlene Sharar at (360) 705-7383. Most classes will be free. Other courses that will be available are:

- Section 106 Process-National Historic Preservation Act of 1966: LAG Manual Chapter 24. Brian Hasselbach, Environmentalist with Highways and Local Programs, will present this class along with the "Introduction to the Endangered Species Act and Biological Assessments" (now offered).
- Advanced Endangered Species Act: LAG Manual Chapter 24.
- Construction Documentation: LAG Manual Chapters 51, 52, and 53, is being developed by Olympic Region modifying the WSDOT course, "Miscellaneous Documentation," and construction inspector's training manual for local agency needs.
- Funding Workshop: LAG Manual Chapters 12, 21, 22, and 23. Agreements and supplements, prospectus, progress billings.
- DBE / EEO / OJT: LAG Manual Chapters 26 and 27.
- Consultants: LAG Manual Chapter 31.

Plans, Specifications and Estimate Preparation (PS&E)

(includes Contract Special Provision Writing)
April 18-19; Moses Lake; May 2-3, Seattle; September 26-27, Kent; October 24-25, Spokane; November 14-15, Lacey. **$40/80**.

Pavement Condition Rating Workshop

May 1-2, Tacoma; May 16-17, Ellensburg; June 26-27, Tacoma. **$45/90**.
Instructors: Paul Sachs and Bob Brooks.

The Basics of a Good Gravel Road

May 8, Moses Lake; May 9, Tri-Cities; May 15, Everett; May 17, Lacey. **$35/70**
Bill Heiden, Instructor.

Cultural Resources Training

May 8-11, The Dalles, OR. **$350**.

Snow and Ice Control Chemicals – Theory and Practice

Six sessions coming this fall. **$35**.

Pedestrian Facilities Workshop

Three to four sessions coming this fall.
Instructors: Dan Dawson and Mandi Roberts.

TRANSPEED
University of Washington

Contact: Christy Roop
phone: (206) 543-5539
fax: (206) 543-2352
web: http://www.engr.washington.edu/epp

To register for classes in this section, contact the person named above.

Tuition fees are for early/late registration.

Fundamentals of Traffic Engineering

April 18-20, Tacoma. **$265/400**

Roadway Culvert Hydraulic Design

April 26-27, Seattle. **$220/400**

Culvert Repair and Rehabilitation

May 17-18, Seattle. **$220/400**

Roadway Value Engineering

May 29-31, Seattle. **$265/400**

Basic Highway Capacity Analysis for Engineers and Planners

June 25-27, Seattle. **$265/400**

University of Washington

Professional Engineering Practice Liaison (PEPL) Program

Contact: Stephanie Strom
phone: (206) 543-5539
fax: (206) 543-2352
email: pepl@engr.washington.edu
web: http://www.engr.washington.edu/epp

To register for classes in this category, contact the person named above.

Design and Retrofit of Culverts for Fish Passage in the Northwest

April 24 and 25, 2001 **$445/475**

University of Washington

Engineering Professional Programs (EPP)

Contact: Emily West
phone: (206) 543-5539
fax: (206) 543-2352
email: uw-epp@engr.washington.edu
web: http://www.engr.washington.edu/epp

To register for classes in this category, contact the person named above.

Prices are for early/late registration.

Mechanical Engineering Refresher

September 6-October 16, Seattle. Tuesdays and Thursdays, 6:30-9:00 pm. **$525/595**

E.I.T./Fundamentals Refresher

September 5-October 15, Seattle. Monday and Wednesday, 6:30-9:00 pm. **$425/495**

Civil Engineering Refresher

September 13-October 18, Seattle. Tuesday and Thursday, 7:00-9:30 pm. **$445/515**

Idaho T2 Center

Contact: Gene Calvert or Ruthie Fisher
phone: (208) 885-4334

To register for a class in this category use the contact listed above.

Basics of a Good Gravel Road

April 23, Preston; April 25, Idaho Falls; April 27, Salmon; April 30, Twin Falls; May 2, New Plymouth; May 4, Lewiston; May 7, Sandpoint. **$40 local agency/$50 private**.
Instructor: Bill Heiden.

Associated General Contractors of Washington

Contact: David Hymel
phone: (206) 284-4500
fax: (206) 284-4595
web: http://www.agcwa.com

To register for classes in this category, contact the person named above.

Construction Site Erosion and Sediment Control Certification Course

April 4-5, Seattle; April 18-19, Tacoma; May 9-10, Shoreline; May 16-17, Seattle. **Spring 2001: tuition $159**

September 5-6, Seattle; September 10-11, Olympia; October 3-4, Vancouver; October 17-18, Bellingham; November 1-2, Seattle; November 14-15, Spokane; November 28-29, Wenatchee; December 5-6, Tacoma; December 12-13, Shoreline. **Fall 2001: tuition goes to $250**

This is the same course previously taught by WSDOT. Classes can be presented for individual agencies.

Managing Project Teams – AGC/WSDOT Training

April 10-11, Tacoma; April 18-19, Seattle; May 1-2, Spokane. **There will be a fee**.

Conferences & Meetings

Society for Ecological Restoration Northwest Chapter Conference

"Beyond Good Intentions"

April 2-6, 2001, Seattle, WA.

Contact: UW Engineering Professional Programs at (206) 543-5539.

Northwest Pavement Management Association Spring Conference (NWPMA)

April 10-12, 2001, Coeur d'Alene, ID.

Registration form in this issue.

Contact: Bob Brooks in the WST2 Center
phone: (360) 705-7352.

American Public Works Association Spring Conference

April 17-20, 2001, Everett, WA.

Contact: Ted Thetford
phone: (425) 257-8824.

PNS Snow Conference

May 29-31, 2001, Kelowna, British Columbia, Canada.

Contact: Carrie
email: carrie@eventfulconsulting.com

Association of Washington Cities Annual Conference

June 19-22, 2001.

Contact: AWC
phone: (360) 753-4137

Fifth International Conference on Managing Pavements

August 11-14, 2001, Washington State Convention and Trade Center, Seattle, WA

Contact: University of Washington's Engineering Professional Programs
Conference Secretatiat
phone: (206) 543-5539
email: pavement@engr.washington.edu.
web: www.engr.washington.edu.
Click on EPP then Conferences.

11th Northwest On-Site Wastewater Treatment Short Course and Equipment Exhibition

September 17-18, 2001.

Contact: University of Washington's Engineering Professional Programs
phone: (206) 543-5539

Road and Street Maintenance Supervisors' School

October 2-4, Spokane; December 4-6, Tacoma, Washington.

Contact: Kelly Newell
Washington State University (WSU)
phone: 1-800-942-4978.

American Public Works Association Fall Conference

October 16-19, 2001, Walla Walla, Washington.

Contact: Dick McKinley
phone: (509) 527-4463.

Sign of the Times

A hearty "thank-you" to Mark Sandifer, Program Director, Colorado LTAP for providing our first "Sign of the Times!"

We will be publishing a humorous transportation sign each issue of the WST2. If you see a funny sign, send us a print or e-mail a digital image (a 1200 x 2000 dpi jpeg or tiff at 400 dpi minimum) and we will add it to our collection for publishing. Please provide your name, title, agency or company and a short description of where and when you saw the sign so we can give you credit and provide a little background on the photo. You can e-mail the image to SundeD@wsdot.wa.gov or mail the photo to:

"Sign of the Times"
WST2 Center
PO Box 47390
Olympia, WA 98504-7390

Please don't send your original photo. Although we will do our best to return the photo, we can't guarantee it.

WST2 is available on-line at:

http://www.wsdot.wa.gov
/TA/T2Center/T2Bulletin-archives/T2Bulletin.html

If you would like to receive an electronic version via e-mail you can subscribe through our "T2 Newsletter" list serve. Go to the WSDOT Home Page. Click on Business with WSDOT, Highways & Local Programs, T2 Center, T2 Bulletin List Serve. Go to the bottom of the page and enter your e-mail address, then click on "Submit." An address verification will be sent to the subscription address. Authorization must be sent to the list request address before the subscription is accepted.

WST2 in hard copy via:

U.S. Mail, call the WST2 Center at (360) 705-7386 and request it. Be prepared to give your name, mailing address, and zip code +4.

If you have a change of address, please contact us with the old and new addresses.

WASHINGTON STATE T² STAFF

Daniel L. Sunde, P.E.
WST2 Director
SundeD@wsdot.wa.gov
(360) 705-7390

Roger Chappell
Engineer
ChappeR@wsdot.wa.gov
(360) 705-7539

Laurel Gray
Training Coordinator
GrayL@wsdot.wa.gov
(360) 705-7355

Bob Brooks
Pavement Technology Engineer
BrookBo@wsdot.wa.gov
(360) 705-7352

David Sorensen
Traffic Technology Engineer
SorensD@wsdot.wa.gov
(360) 705-7385

Wendy Schmidt
WST2 Assistant
SchmidW@wsdot.wa.gov
(360) 705-7386

John Easley
Road Show Trainer
(360)-705-7386

Fax
(360) 705-6858

WST2 Web Site
www.wsdot.wa.gov/TA/T2Center/T2hp.htm
Toll Free Training Number
1-800-973-4496

WASHINGTON STATE T² ADVISOR COMMITTEE

Phil Barto, Chairman
Maintenance Engineer
Spokane County
(509) 477-7429

Gary Armstrong
City Administrator
City of Snoqualmie
(425) 888-5337

Joe Bonga
Road Construction/Maintenance
Bureau of Indian Affairs
(503) 231-6712

Mike Deason
Public Works Director
City of Leavenworth
(509) 548-5275

Randy Hart
Grants Program Engineer
County Road Administration Board
(360) 586-7586

Marjorie Hutchinson
South Zone Engineer
Naches Ranger Station, USFS
(509) 653-2205 ext. 261

Will Kinne
Road Operations Manager
Pierce County
(253) 798-2953

Jack Manicke
Staff Superintendent
WSDOT/Maintenance
(360) 705-7852

Phil Meyer
Maintenance Coordinator
Whitman County/EWCRS
(509) 397-6209

Walt Olsen
County Engineer
Pend Oreille County
(509) 447-4513

Craig Olson
Government Services Manager
ENTRANCO/APWA
(360) 709-0301

Tom Rountree
Supervisor
King County DOT/RSD
(206) 296-8100

Jim Seitz
Transportation Specialist
Association of Washington Cities
(360) 753-4137

Tamarah E. Knapp, P.E.
City Administrator
City of Buckley
(360) 829-1921 ext. 200

Dave Zabell
Director of Public Works
City of Bothell
(425) 486-2768

EXOFFICIO MEMBERS

Ovidiu Cretu
Manager, Technical/Professional Programs
WSDOT Staff Development
(360) 705-7066

Kathy Lindquist
Research Implementation Manager
WSDOT Research Office
(360) 705-7976

Liana Liu, P.E.
Highway Engineer
T2 Coordinator, FHWA
(360) 753-9553

Richard Rolland
Director
NW Tribal LTAP
(509) 358-2225

WST2
HIGHWAYS &
LOCAL PROGRAMS
SERVICE CENTER

Washington State Technology Transfer Center
WSDOT-H&LP Service Center
P.O. Box 47390
Olympia, WA 98504-7390

PRSRT STD
U.S.POSTAGE PAID
Washington State
Department of Printing